DISASTER PREPAREDNESS

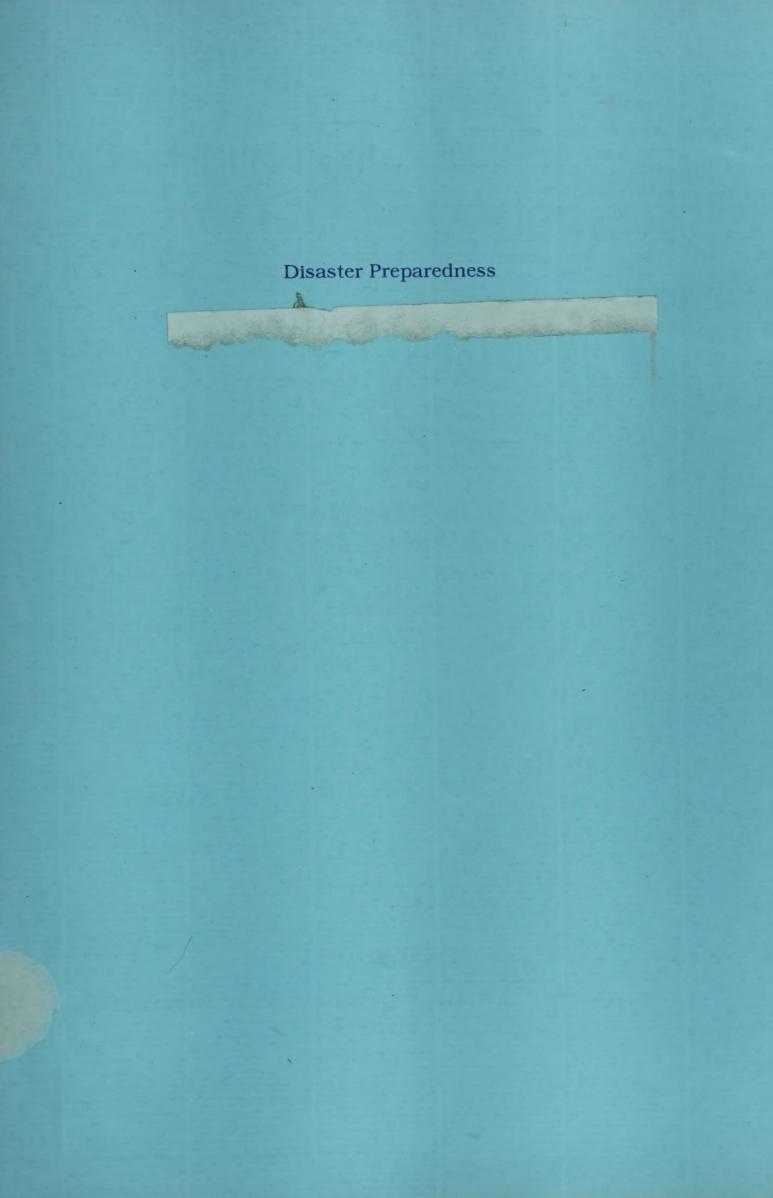
REVIEW AND PLANNING MEETING

21-22 September 1992, New Delhi

(A Report)

Organized by

DIRECTORATE GENERAL OF HEALTH SERVICES
(GOVERNMENT OF INDIA)
in collaboration with
WORLD HEALTH ORGANIZATION





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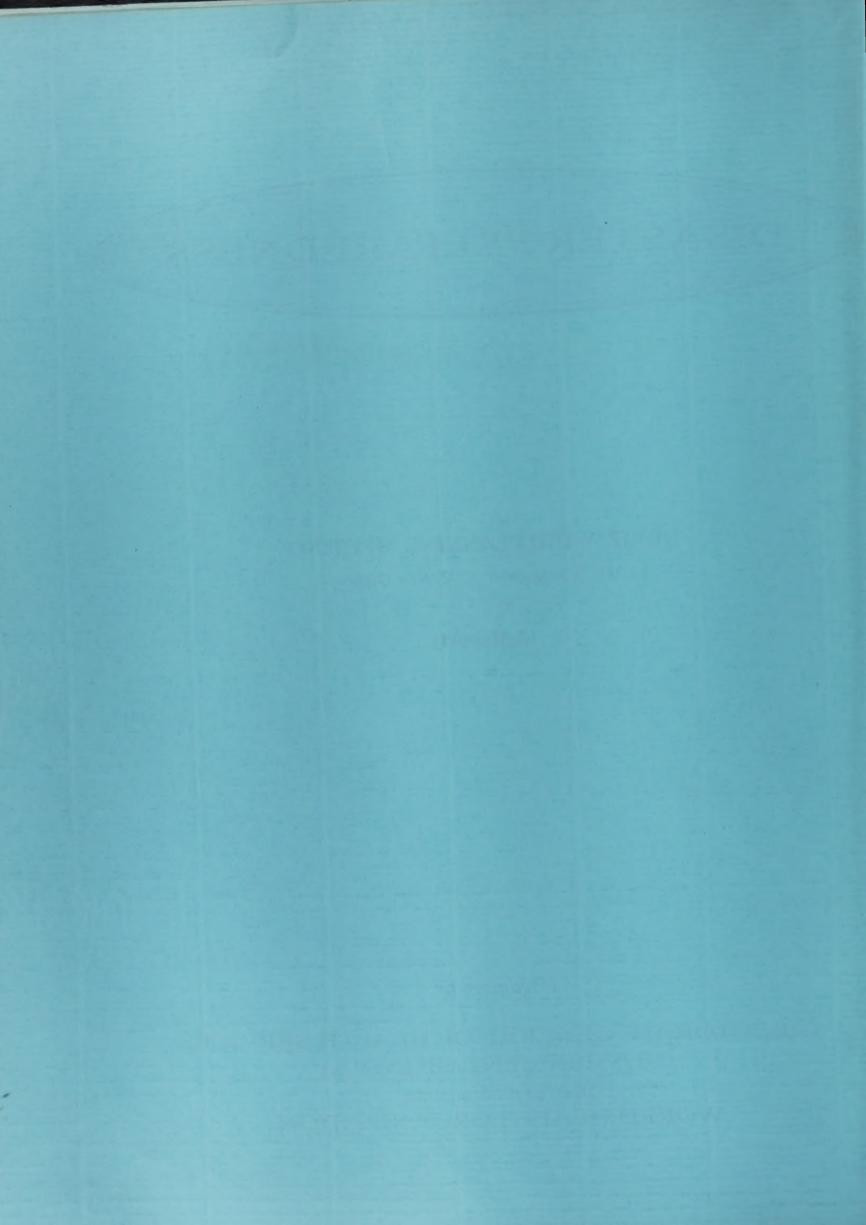
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स्वास्थ्य सेवा महानिदेशालय निर्माण भवन नई दिल्ली-110 011

DIRECTORATE GENERAL OF HEALTH SERVICES NIRMAN BHAWAN NEW DELHI 110 011

DR. A.K.MUKHERJEE DIRECTOR GENERAL

Dated 30th Jan., 1993

FOREWORD

This is for the first time that the Govt. of India (Ministry of Agriculture) is hosting the 4th Session of the Scientific and Technical Committee from 1st to 5th February,1993. As we all know that General Assembly of United Nations has declared the current decade as International Decade for Natural Disaster Reduction (IDNDR). For the concerted international action for reducing the occurrence and reducing the adverse impact of natural calamities, the specific goal of IDNDR is aimed at enhancing the capabilities of countries to face the challenge of natural disasters. In India, the focal point of IDNDR is the Ministry of Agriculture. For Health Sector preparedness there is a separate unit (Emergency Medical Services and Relief) under the Director General of Health Services in the Ministry of Health & F.W. The Emergency Medical Relief (EMR) is also working closely with WHO and over the past several years have developed activities within the framework of national programme.

The STC meeting will give an opportunity to expose the Indian Disaster Managers of Health Sector to look from close angle the planning process of STC so that they learn about Global activities and at the same time they will get an opportunity to present their preparedness plans and programmes to STC members. The planning and programmes of this decade in the direction of minimising the effect of natural disaster will go a long way and will help the humanity in general.

I wish all success to the Review and Planning Meeting and forthcoming S.T.C. Meeting to be held in Delhi shortly.

(Dr. A.K.Mukherjee)

Mundy



स्वास्थ्य सेवा महानिदेशालय

नई दिल्ली-110 011

DIRECTORATE GENERAL OF HEALTH SERVICES NIRMAN BHAWAN NEW DELHI 110 011

DR. BRIJ BHUSHAN Dy. Asstt. Director General (EMR)

Dated 30th Jan., 1993

ACKNOWLEDGMENT

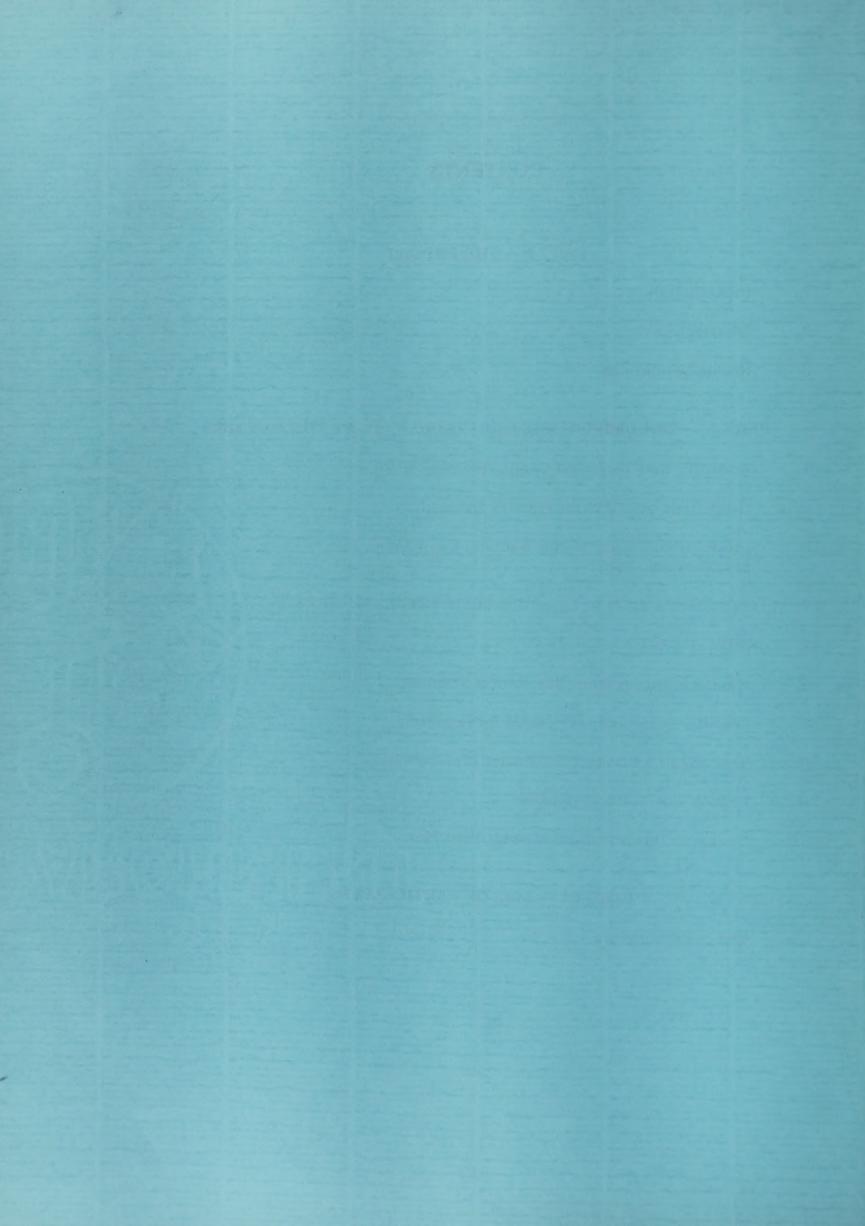
Dr. B.K. Verma who is the Director, Emergency Medical Relief in the Directorate General of Health Services under the Ministry of Health and F.W has started the work of disaster management in health sector even before the General Assembly of United Nations declared this decade as International Decade for Natural Disaster Reduction. Since then he has been tirelessly working in refining and improving the various aspects of health sector disaster management activities. He has set a new trial ablaze in this field which is being followed by the rest of us. He is instrumental in identifying various institutions in the country which in near future will be designated as WHO Collaborating Centres. He will be remembered for a long time to come in the Ministry for doing the original and innovative work in this field but at the same time I would like to point out that our programmes could not have succeeded without monetary support and moral support of W.H.O. and Dr. K.Olavi Elo, WR (India), (Director Designate of IDNDR). He has been a moving spirit behind the whole movement of IDNDR in India. I am sure that he will be getting much more important positions and responsibilities to shoulder in United Nations so that IDNDR becomes a success. He will be remembered for all times to come in our Department as a manager who has been very active, enthusiastic and energetic in this field so much so that for us he has become a synonym with disaster management. He has fully devoted himself for the cause of IDNDR. We wish all success to him and to Dr. Verma towards fulfilling the goal of IDNDR.

This would be incomplete without mentioning the names of my Division people who have worked together to make it a success. Mr. C.K.Jain, Mr. R.Dayanandan, Mr. Santosh Kumar, Mr. S.L.Prasad, Mrs. Sudha Jose, Mrs. Lalita Ailawadi, Mr. S.N.Mitra, Ms.Manju and last but not the least Mr. R.S.Kathuria have done excellent work in organising all the disaster related activities of our department.

Dr. Brij Bhushan

CONTENTS

	P	ige
	PART I — THE REPORT	
1.	Introduction	1
2.	Discussions	3
3.	Recommendations	6
	PART II — DOCUMENTS (EDITED) CIRCULATED AT THE MEETING	
1.	Scientific and Technical Committee of IDNDR	11
2.	Guidelines of DGHS for Flood & Drought	13
3.	Proposal for Health Sector National Emergency Preparedness Plan	29
4.	All India Institute of Hygiene & Public Health - Activities	39
5.	JIPMER Centre - Activities	49
6.	Disaster Management Research & Training	57
7.	Disaster Mitigation - Priorities for Research	61
8.	Training Programme for Disaster Preparedness	65
9.	Coping with Natural Disaster	67
10.	Chemical Hazard - Dist. Management Plan	71
	PART III — LIST OF PARTICIPANTS	
	List of Participants	77



PART I - THE REPORT



INTRODUCTION

A meeting to review the progress of action initiated as part of the observance of the 1990s as the International Decade of Natural Disaster Reduction (IDNDR) was held on September 21 and 22, 1992 at the Indian Red Cross Society (IRCS) building. The meeting, organised by the Directorate General of Health Services (DGHS) and the office of the World Health Organization (WHO) Representative in India, was attended by representatives of DGHS, WHO, some national institutions and voluntary organizations. The review was undertaken in the context of a proposal to invite the Scientific and Technical Committee (STC) of IDNDR to have its next meeting in New Delhi. The list of the participants is in the annexure.

Objective

The meeting was convened with a view to reviewing the peroformance of various premier institutions engaged in the disaster management training programmes, and assessing the strengths and weaknesses of various NGOs engaged in the disaster mitigation for the forthcoming STC meeting.

Inaugural Session

The meeting was inaugurated by Dr A. K. Mukherjee, Additional Director General of Health Services. Dr Mukherjee explained the purpose of the meeting and said that disaster preparedness assumed significance in the light of the enormity of the problem. He informed the meeting about the role of Indian Red Cross Society in relief activities. The IRCS proposeed to introduce various courses in its training centres in a big way, he added. He noted that disaster was knocking at the doorsteps every month and in the developing countries more than 3 per cent of GNP was lost in natural disasters. He called for organised effort to mobilise the people and improve the level of preparedness.

After the introduction of the participants, Dr V. N. Sardana, Director (Emergency Medical Relief) in the DGHS explained the objectives of the meeting. He said that second Wednesday of October every year had been designated as 'International Day for Natural Disaster Reduction' to generate public awareness on the need for preparatory steps that would help reduce the extent of loss of lives and property at times of natural disasters. Besides this, a high level Council to advise the U.N. Secretary General and a 24-member Scientific and Technical Committee (STC) had been set up. The STC proposed to have its next meeting in New Delhi and the present review was meant as a prelude to this.

Mr B. Narasimhan, formerly, Additional Secretary and Relief Commissioner in the Department of Agriculture, Government of India and currently Managing Director of Gujarat State Petrochemical Corporation presented the keynote address. He said India was one of the most disaster-prone countries. The STC would address itself to the

global problem but the present review would help identify the gaps in the national programme of action. The STC meeting would provide an opportunity for interaction between the State Governments and the international experts. This would, in turn, help in the building up of national capabilities, formulation of National Disaster Preparedness Plan and generation of public awareness through dissemination of information.

Mr Narasimhan noted that India had one of the longest traditions of disaster management, particularly droughts and floods. But the approach was one of exercise in philanthropy. At the political level, he regretted, there was opaqueness on the long-term needs for management. In this context, he referred to the constitutions of the National Advisory Council (NAC) and said that so far the NAC had had only one meeting. The second meeting was yet to be convened. There was consderable apathy and there was more of reaction to a disaster situation than any direction prior to it to mitigate its effects.

From 1987, a different kind of problem was being faced. The Ninth Finance Commission's recommendations had provided a suitable alibi for inaction by the Central Government. In the wake of the Bhopal tragedy, there were proposals for contingency plans. But at the time of the earthquake disaster in Uttar Kashi, the management of the disaster was in total disarray. He expressed the view that there should be much better and more meaningful management of disaster events. With a concern on sustaiability, we should manage our capability with proper planning, he remarked.

Mr Narasimhan felt that the coordination of efforts by voluntary organisations should be much more meaningful. Disaster management should be viewed as an esoteric exercise. The concern for disaster management should become part of functional programmes. One should address disaster management problems through processes and systems. He called for inter-disaster studies and evaluation to provide feed back, sustained intervention studies, information and proper preparedness and to evaluate adminstrative processes to promote preventive measures. He was critical of too much gestation period between planning and implementation, institutional and community capabilitieis. He highlighted the role of NGOs in this regard.

Dr Olavi Elo, WHO Representative to India said that one-third of the International Decade for Natural Disaster Reduction had passed. But very little had been done at the field level. When the IDNDR was decided upon there was peace in the world. But now there was turmoil everywhere. There were strifes in many countries. Manmade disasters were in the forefront demanding world attention. This, in turn, had affected implementation of IDNDR. However, recently there had been a major natural disaster in Africa—Somalia, which had caught global attention.

Dr Elo said that the forthcoming STC meeting would help in interaction between the international experts and individual institutions and NGOs. We could also present reports and programmes to STC. He further informed the group that UNDP was going to invest 5 million US dollars in training programme. We could request UNDP to put some of that money for India for training. Funds were also available in global and regional programmes in disaster management. The UNICEF was active globally in disaster relief with an effective and flexible supply system.

Dr Elo noted that right from the beginning, the UN was not inclined to meet the financial commitment for the IDNDR from the regular budget and wanted the funding to come from the donor countries. Among the UN bodies, the UNDP, the UNICEF and WHO had programmes related to IDNDR. The WHO, he said, had taken disaster preparedness more seriously than other U. N. organisations, but funds were not forthcoming. The funds for development programmes could not be diverted for disaster preparedness programmes. If part of the funds earmarked for relief could be diverted for preparedness, that would be helpful.

Most of the time, Dr Elo noted, the funds for relief were made available late. There were regional activites in collaborative centres from where one could get management and other training modules. In SEARO region, there was no full time Programme Officer at country level. Some funds were available for WHO collaborative centres and some additional funds could be made available from extra budgetary resources. He called for deliberations on the specific issues of IDNDR for the coming STC meeting so that useful recommendations could be made.

DISCUSSIONS

In the course of general discussions, Dr S. P. Mukhopadyaya of the All India Institute of Hygiene and Public Health, Calcutta explained the studies initiated by the Disaster Management Centre (DMC) of the Institute. He identified the gaps in programme implementation which were: 1) lack of awareness on the part of the community and various functionaries in the pre and post disaster phase; (2) need for an integrated approach to different sectors in disaster management and (3) lack of resources.

Mr. K.A.V.R. Krishnamachari, Director, Regional Medical Research Centre of ICMR in Bhubhaneshwar said there were projects in the region aided by the World Bank. DANIDA and British Council. If disaster preparedness could be included as components of these projects that would help solve the problem of funds. He wanted the meeting to urge the Orissa Government to consider provision of funds. The RMRC had a training center for disaster preparedness. Soon, crisis management and surveillance management would be included in this training programme.

Dr K.S. Ramesh of Administrative Staff College of India said that from 1976 onwards the ASCI had evinced interest in studies related to natural disasters. It had been organising training courses for the personnel of district adminstration. He regretted that after 1987 the response to this programme had been poor. The IDNDR had revived the interest. He identified the areas where management training needed to be imparted. At the field level, there should be integration of development activities and disaster preparedness, he felt.

Mr N. K. Jain, Convener, Joint Assistance Centre explained how NGO participa tion could be made effective. He was of the view that normally a disaster was attended to as a fire fighting exercise. There was also lack of interaction between the non-governmental organizations and the Government. The NGOs had a potential not only in dealing with disaster situation but also in regard to disaster preparedness and mitigation.

Mr R.K. Thankappan, Principal of Health and Family Welfare Training Centre. Trivandrum explained the steps taken to impart training for disaster management so as to increase the level of awareness and improve upon the capabilities of various functionaries.

Dr Gouri Gupta, National Programme Officer of WHO informed the group that disaster management had been included in the course for District level medical officers conducted by the Rural Health Division of Health Ministry.

Ms Helen Ohlin of SEARO/WHO explained briefly the contribution of WHO in promoting NGO effort and other activities. She expressed the view that it was interesting to learn that a lot of effort was being taken by various agencies and coordination among all these agencies was necessary.

Dr Dubey, Director JIPMER said Emergency Medical Relief had been included in the undergraduate medical curriculum. Several training modules for health workers at different levels were being formulated.

Presentations:

The participants then gave a detailed presentation of the action programme undertaken by their respective institutions.

Dr S.P. Mukhodhyaya of All India Institute of Hygiene and Public Health, Calcutta explained with the help of slides the steps taken to sensitise the health workers and the community as a whole on the various aspects of natural disasters. Through a multi-sectoral approach, appropriate orientation had been given. The Institute was also bringing out a newsletter besides a special issue of the Indian Journal of Public Health on Disaster Management.

Dr Dubey of JIPMER said curriculum was being developed for the training of trainers. The plan of action included organisation of training programmes for key training personnel, development of curriculum and training material for use by health personnel, creation of a resource centre for promoting education and training. For this purpose, a working group had been formed. Two faculty members from JIPMER were proposed to be provided training in prevention of traffic accidents.

Mr N. K. Jain of JAC said that the Government of India had decided to provide Rs. 15 Crores to set up a Disaster Management Institute in the Sixth Plan. But, so far no provision had been made, even in the Eighth Plan. He traced the origin of JAC and recounted the hopeful trends, both national and international, in tackling this problem. The aim of the JAC was to percolate awareness of the need for everyone at all times to be in a state of preparedness to face natural and man made disasters, with composure and confidence. This could be done through education and training and these were the main activities of the JAC, which had library on disaster with over 3000 holdings.

Dr Dutt of NEERI said that currently his institution was engaged in developing disaster management and emergency preparedness plans for chemical industries based on probablishic risk assessment environmental risk assessment for industrial, water resources and mining projects; development of off-site emergency preparedness plan for district level,' based on area risk assessment and vulnerability analysis, in Vishakapatnam district; environmental health interface modelling, calibration and validation.

Dr Ramesh of ASCI said that case studies had been taken up on cyclones and floods, designing a computerised simulation game, developing audio-visual material



and organising a one week training course on disaster management. The case study on Cyclones had been initiated in the Coastal Districts of Andhra Pradesh in May 1992.

The following are some of the points brought out in the preliminary reports of the case studies:

- shortage of drugs pose a problem in undertaking mass vaccination and distribution of vitamin tablets during the period of cyclonic storms;
- in the absence of a doctor to complete the formalities, the dead bodies cannot be removed and decomposition takes place;
- during cyclonic storms, several areas get flooded and the wells get polluted but health personnel find it difficult to provide chlorination due to inadequate transport facilities;
- the response from the private doctors to serve in an emergency has not been encouraging;
- the rush of VIPs to the scene of disaster affects the work of the senior officers in attending to the emergency;

The ASCI team had proposed to study an island inhabited by a small group of fishermen and the problems faced by them during the cyclone.

Dr Ramesh said a Simulated Cyclone Management Game, called 'SIMCLONE' had been designed by Prof. S. Ramani, Director of NITIE and this had been effectively used in the training courses on disaster management. A similar game on drough management was proposed to be designed. A drought prone district of Tamil Nadu, Dharamapuri, had been chosen for the case study on drought. An audio visual material on cyclone in Andhra Pradesh was proposed to be developed.

Dr Thankappan of Health & Family Welfare Training Centre, Trivandrum said there were 47 regional training centres to impart inservice training to health personnel. It would be ideal to integrate all the training programmes into the existing training system. Similarly, some of the vertical training programmes at the national level could be integrated into the inservice training of the regional training centres. He also suggested that one of the health officers at the district level might be given charge of the training programme at the district level. He noted that in certain States like Maharashtra, Block level training had been introduced. This was a new concept meant to provide training in disaster management to grass root level health functionaries like multipurpose workers. In his view, the training programme should cover not only the Government functionaries but also those outside the Government.

Dr K.A.V.R. Krishnamachari of RMRC, 'Bhubaneshwar explained the activities undertaken by the Centre and presented an outline of a National Strategy for drought mitigation. This envisaged identification of drought prone areas and provision of caloric supplementation, alternate source of income generation, massive dose of Vitamin A etc.

Dr R.S. Sharma of National Institute of Communicable Diseases recounted the action programme initiated by NICD towards disaster preparedness. He said the NICD was coordinating disease surveillance work done by the Surveillance units in each state.

Mrs K. Alamelu of Bharat Scout and Guides recounted the steps taken to generate awareness among the children in particular, through essay and painting competition. The paintings entered for the competition were exhibited at the meeting room.

Dr Gupta of IRCS detailed the work of his institution in providing relief to disaster victims. The IRCS was the first vouluntary agency to rush to any disaster site. It was planning to start a Central Training Institute.

Mr A.N. Jha of Tata Risk Management Services said an area which had a high concentration of chemical and petrochemical units had been selected for indepth study by his Centre. The idea, inter-alia was to develop maximum credible loss scenerio after examining the onsite plans and based on this, evaluate the offsite implications. This would help in the formulation of District Disaster Management Plan.

Mr B. Narasimhan, who chaired the session, said that the role of NGOs in raising community awareness needed emphasis. He wanted a network of NGOs to be promoted.

RECOMMENDATIONS

Dr V.N. Sardana, Director (EMR) read out the consensus/recommendations arising from the deliberations, which are as follows:

1. Training

The Group recommended setting up of a Task Force consisting of representatives from multi sectoral training institutions. They will develop training strategy and standardise modules for training, develop training modules for key trainers, define the course content for training to health sector functionaries and prepare modules for the training of NGOs.

2. Surveillance

The Group suggested setting up of a Task Force that would standardise the methodology for carrying out pre and post disaster surveillance. This task could be assigned to All India Institute of Hygiene and Public Health, Calcutta and National Institute of Communicable Diseases, Delhi which were already involved in surveillance.

3. Data Base

The Group recommended that a clear strategy should be formulated for collection of information and setting up of a data base on different aspects of disaster programme. An inventory of the institutions involved in various disaster programmes should be prepared.

THE REPORT

7

4. Research

The Group suggested that research should be meaningful, applied and positive. Institutions should indentify the various studies and come forward with proposals for carrying out research. Keeping in view the fact that they should involve the user agency, the outcome of research should be meaningful and applicable.

5. Resources

The Group was of the view that the States must have a special head for funding the disaster programmes. It was also suggested that out of these, some percentage should be earmarked for disaster preparedness. The Group further suggested that the nodal Ministries should be asked to prepare a memorandum for submission to the Tenth Finance Commission in regard to allocation for Calamity Relief Fund (CRF).

6. STC Meeting

The Group recommended that necessary papers should be prepared for the forth-coming STC meeting indicating capabilities, preparedness and information dissemination.

7. Role of NGOs

The role of NGOs in the National Disaster Management Programme and IDNDR should be clearly defined and they should be actively involved in the programme.



PART II - DOCUMENTS (EDITED) CIRCULATED
AT THE MEETING



PART-II

DOCUMENTS (EDITED) CIRCULATED AT THE MEETING

1.	Scientific and Technical Committee of IDNDR	Dept. of Agriculture
2.	Guidelines of DGHS for Flood & Drought	DGHS
3.	Proposal for Health Sector National Emergency Preparedness Plan	DGHS
4.	All India Institute of Hygiene & Public Health - Activities	AIIH&PH
5.	JIPMER Centre - Activities	
6.	Disaster Management Research & Training	. ASCI
7.	Disaster Mitigation - Priorities for Research	NEERI
8.	Training Programme for Disaster Preparedness	H&FWTC (Trivandrum)
9.	Coping with Natural Disaster	JAC
10.	Chemical Hazard - Dist. Management Plan	TRMS



SCIENTIFIC AND TECHNICAL COMMITTEE OF IDNDR

(A Glimpse from DEPARTMENT OF AGRICULTURE & COOPERATION — NODAL Ministry of Govt. of India for Natural Disaster)

The General Assemby of the United Nations, through a Resolution, has declared the current decade as International Decade for Natural Disaster Reduction(IDNDR) for concerted international action for reducing the occurrence and minimising the adverse impact of natural calamities.

The goals of the decade are :-

- a) To improve the capacity of each country to mitigate the effects of natural disasters expeditiously and effectively, paying special attention to assisting developing countries in the assessment of diaster damage potential and in the establishment of early warning system and disaster-resistant structures, when and where needed;
- b) To devise appropriate guidelines and startegies for applying existing scientific and technical knowledge taking into account the cultural and economic diversity among nations;
- c) To foster scientific and engineering endeavours aimed at closing the critical gaps in knowledge in order to reduce loss of life and property;
- d) To disseminate existing and new technical information related to measures for the assessment, prediction and mitigation of natural disasters;
- e) To develop measures for the assesment, prediction, prevention and mitigation of natural disasters through programmes of technical assistance and technology transfer, demonstration projects, and education and training, tailored to specific disasters and location, and to evaluate the effectiveness of those programmes.

The United Nations General Assembly has called upon National Governments to set up National Committees for pursuing the goals of the Decade and take up specific policies. Responding to this, the Government of India has constituted a Cabinet Committee on Natural Calamities, which will direct the implementation of programmes to give effect to the objectives of the IDNDR. A National Advisory Council on IDNDR has also been constituted, as suggested in the UN General Assembly Resolution, under the Chairmanship of Agriculture Minister, to formulate and recommend programmes for natural disaster mitigation during IDNDR and to give specific thrust to the disaster reduction components in the sectoral development programmes of the Five Year Plan. In the Department of Agriculture & Cooperation, a Core Group on IDNDR is also working to study the issues relating to natural disaster management programme and identify specific areas for intervention.

The United Nations, in accordance with the Resolution, has set up a Scientific and Technical Committee (STC). The STC is a body of 24 experts, for assisting the member-nations in the identification of major problems and devising stratageies in the application of scientific and technological input in natural disaster management within the respective countries. The STC is a non-political body consisting of eminent persons selected for their expertise in relation to different types of disasters.

In its resolution declaring IDNDR, the UN General Assembly has laid special emphasis on the crucial role of professional, scientific and technological communities in the formulation and implementation of specific programmes, designed to bring about a general reduction in the occurrence and impact of natural disasters.

The STC has been meeting frequently to review the general global efforts in natural disaster reduction and makes specific suggestions and recommendations for adoption in respect of individual problems. The STC has been meeting in different parts of the world. It met in Guatemala in September, 1991 and at Geneva in March,1992. The STC also highlights regional problems and makes specific recommendations to the member-nations for implementation. The deliberations of the STC in a developing country would help in focussing global attention on the specific problems of the region and could lead to solutions for intractable problems, and international support for specific disaster reduction measures recommended by the STC in respect of the countries of the region. Endorsement of the national effort in specific areas by the STC could promote flow of aid as a result of donor interest and also lead to regional and international cooperation in respect of specific technological measures in relation to forecasting, warning and mitigation.

India is a major victim of natural disasters and, therefore, it has proposed to host the next meeting of the STC. The State Governments' representatives, who are being invited, would also get an opportunity to interact with regional and international experts and professionals of the field. This is from a realisation that the implementing authority for any disaster reduction/mitigation programmes lies with the State Governments in the Indian context of a federal structure. More so, to enhance the level of participation in development programmes, engineered to disaster mitigation, close working relationship with Non-Governmental Organisations(NGOs) entail their involvement in the STC meeting. Therefore, experts and NGOs working in this field are also being invited.

A GUIDELINES FOR HEALTH SECTOR DISASTER PREPAREDNESS (DROUGHT & FLOOD) IN INDIA

(Dr. Brij Bhushan, Dy. Asstt. Director - General Emergency and Medical Releif, Dte.G.H.S., Ministry of Health)

Disaster is any occurrence that causes economic disruption, loss of human life, and deterioration of health services on a scale sufficient to warrant an extraordinary response from outside the affected community or area. Disaster, which may be classified as natural or man-made, usually occurs suddenly and unexpectedly, disrupting normal life and infrastructure of social services including health care 'systems.

The importance of preventive planning for disaster management is undeniable. A country's health system and public health infrastructure must be organised and kept ready to act in any emergency situations as well as under normal conditions. They must be cognizant of the types of measures to be taken in the event of a disaster. These will differ according to the type and severity of impact of a disaster on the affected population, service infrastructure and environment.

National Policy

The Government response and efforts set the pace and determine the quality of the community's reaction to a crisis situation resulting from a natural calamity. In a federal set-up, as in India, the responsibility to formulate the Government's response to a natural calamity is essentially that of the concerned State Government. However, the Central Government supplements to the extent possible the efforts of the State Government by way of providing financial and material assistance for effective management of the situation in accordance with the existing scheme of financing the relief expenditure.

The present scheme of financing the relief expenditure arising out of natural calamities has come into force with effect from April, 1990 consequent upon the acceptance of the recommendations of the Ninth Finance Commission. Under this scheme, a Calamity Relief Fund (CRF) has been constituted for each State with certain amount allocated to them. Of this amount, 75% is contributed by the Central Government and given to the States in four equal installments. The balance 25% is provided by the State Government from its own resources. Following the constitution of the CRF, it is the responsibility of the concerned State Government to meet the expenditure on calamity relief unless and until the crisis is of a rare severity, in which case, the Government of India will examine the case and if found deserving, give additional funds to the State.

Programme Coordination:

The Emergency Medical Relief Division of the Directorate General of Health Services in the Ministry of Health & Family Welfare is the technical wing exclusively for the management of crisis situations. The Division is headed by the Director, Emergency Medical Services and Relief. He reports to, and receives instructions directly from, the Director General of Health Services and Secretary, Ministry of Health & Family Welfare. The Secretary, Health and Family Welfare has empowered the Director, (EMR) to represent the Department for crisis situations in different crisis management groups.

In the Ministry of Health & Family Welfare, the coordination is ensured through the office of the Director, EMR among the Director of Health Services of the States, Stores Division under the Central Government, vaccine producing units, National Institute of Communicable Diseases and Director, Malaria Unit. This type of coordination is confined during disaster situations. In order to give a regular coordination mechanism for any epidemic situations, even during normal period, a structure has been framed at various levels of health infrastructure(Central, State and District), which will be put into operation shortly.

A detailled guideline separately for flood, drought, cyclone and earthquake has been prepared and circulated in the month of March and April to all the drought-prone States and during May and June to the flood and cyclone-prone States. The Telephone numbers and other relevant information of the concened officers at the State level are updated.

During disaster, the Director (EMR) contacts the Control Room and the officer concerned at the State level either by telephone, telex or wireless system (Police Control Room) between 10 and 12 Noon and gets a feed back on :

- (a) the extent of disaster situation on a particular day:
- (b) population affected; and
- (c) health profile like number of patients, type of patients and any problem to deal with the situation.

The disease surveillance is undertaken by the surveillance units of each State and coordinated at the Central level by the National Institute of Communicable Diseases.

In case, additional medical stores are needed, Director (EMR) directs different medical stores located at Karnal, Delhi, Bombay, Madras, Hyderabad, Calcutta and Guwhati for immediate air-lifting of medical stores.

The Central Research Institute at Kasauli (H.P.) under the Central Government, the Haffkine Institute at Bombay under the Government of Maharashtra, the King Institute at Guindy, (Madras) under the Government of Tamil Nadu and the Institute of Preventive Medicine at Hyderabad under the Government of Andhra Pradesh are kept in readiness to supply vaccines, particularly for typhoid and cholera. The major responsibility, however, is taken by the Central Research Institute, Kasauli for ensuring supply of vaccines.

As a matter of clarifiction, it may be mentioned that inoculation for cholera is done only on social pressure.

By and large, the initial re-deployment of medical team is done by the District Chief from PHCs under him followed by medical teams from other Districts by the State Directors of Health Services and by the Director General of Health Services through Director (EMR) at the Federal level. Federal deployment of manpower is done rarely as every State has adequate manpower.

Contingency Plan for Flood:

Natural calamities like flood are regular phenomena in India. Some parts of the country are more prone than others. By now, specific talukas/districts which are affected regularly by floods are well known to State/UT authorities. Necessary remedial measures are well known to these authorities.

With scientfic development, flood forecasting is made much in advance. Public health measures can be well planned in advance in a systematic and scientific manner. Some of the highlights of health problems relating to flood have been summarlized below.

Public Health Risks

The health problems relating to flood can be either due to direct impact on human population, direct impact on existing infrastructure and resultant effects due to combination of these factors.

- A. Direct impact: Resulting in drowning
- B. Damage to existing infrastructures
- (i) Direct effect on water, power supply and sanitation facilities, forcing the community to consume polluted water and stay in usanitary condition;
- (ii) Damage to existing health infrastructure resulting in ineffective functioning of available facilities;
- (iii) Destruction of houses: The affected population is exposed to adverse climatic conditions leading to disease particularly respiratory infection and fever;
- (iv) Damaged ration shops and other shops providing food may lead to shortage of food in affected community leading to starvation conditions.
- C. Combination of factors: The above factors may change the living conditions of the community temporarily till they are finally rehabilitated. Sudden change in environment leads to following factors, each contributing to health problems:
- (i) Population displacement: There are two ways by which population displacement may affect the health of the affected community:-
 - (a) Movement of population results in overcrowding at new places with possibility of transmission of diseases from moving population to local population of new places.

- (b) Health problems in temporary shelters: When the affected community is shifted temporarily to a new place, existing water supply system, toilet, cooking space becomes inadequate leading to insanitary conditions resulting in different types of diseases specially diarrhoeal diseases. Epidemic may be a possibility.
- (ii) Population Density: Density of population increases proximity, resulting in spread of diseases.
- (iii) Work pressure on existing health infra structure: The existing health centres may suddenly start getting large number of patients which may be more than their absorbing capacity. Additionally, if these centres are also affected by floods, it may be difficult for them to discharge their responsibility.
- (iv) Psychological manifestation: Loss of property or loss of lives of relatives produces tremendous tension and pressure on mind, resulting in anxiety, neurosis or depressions. Due to such psychological manifestation, the affected persons remain unhappy despite any amount of gratuitous relief, which are commonly seen during such situations.

List of Common ailments/diseases found after floods

Types of ailments

- i) Respiratory diseases
- ii) Injuries (not very common)
- iii) Water-borne diseases
 Diarrhoeal diseases/
 (cholera, gastroenteritis,
 Dysentery etc.) Infective
 Hepatitis, Poliomyelitis

Due to .

- Adverse condition of living
- Collapse of houses/standing structure
- Non-availability/Inadequate availability of drinking water due to :-
- a) flooding of wells with polluted drinking water;
- b) breakdown of piped water supply;
- c) Inaccessibility of available water sources.

Insanitary conditions in villages/ evacuation camps due to:-

- a. accumulation of water;
- b. lack of excreta disposal;
- c. blockage/disruption of normal drain:
- d. slush with increase in breeding space for flies;

		f. dı g. dı	ercrowding imping of compound dry refuse; imping of animal excreta; imping of carcasses.
iv)	Malaria/Filaria		crease in mosquito breeding ace.
v)	Skin diseases/Eye Diseases/ Respiratory Diseases		ck of personal hygience d overcrowing.
vi)	Snake/Insects bite	- W	ater entering into their shelters.

SPECIFIC PUBLIC HEALTH ACTIVITIES FOR FLOOD

A. Preventive measures

As mentioned earlier, water-borne diseases are one of the most common phenomena during flood. Diarrhoeal diseases is one of the earliest manifestations but diseases like typhoid, infective hepatitis and poliomyelitis are usually seen after about a fortnight. Therefore, emphasis, as far as preventive measures are concerned, is given consumption of safe drinking water, public education, including do's and don'ts and sanitary arragnements.

- (i) Safe drinking water: Safety of drinking water can be ensured either at the point of storage or distribution. Various methods practised are:
 - (a) Boiled Water: Water could be boiled for 10 to 15 minutes and then stored in clean and covered containers. This could be used after it has cooled.
 - (b) Use of chlorine tablets: Nascent chlorine makes water safe for drinking:

Weight of Tablet		Strength of Chlorine		Quantity of water for disinfection	
2.5	gm	300	mg	. 20	litres
0.5	gm	25	mg		litres`
0.125	gm	1.25	mg		litres

(c) Bleaching powder: Bleaching powder is used to disinfect usually bigger sources of water. Usual dose (with 35% chlorine) 2 gms for 5 litres of water. If water is in the wells, the quantity of water could be estimated as-

Diameter of	X	Depth of	х	5 = gallons of water
well		water		in well

(d) Monitoring: Chlorine content of water is estimated by chlorinometer. At least 0.245 ppm of chlorine should be available in water for safe drinking.

Microscopical and bacteriological examination including stool culture should also be done at frequent intervals

- (ii) Disposal of water and excreta: Existing infrastructure is likely to become ineffective. Thereofre, adequate arrangements for disposal of wastes should be planned in advance, so that it can be executed immediately.
- Fly proofing: Areas including houses/shelters should be disinfected regularly by spray of bleaching powder.
 - (vi) Health Education: Use of mass media like radio, newspaper, pamphlets, leaflets containing small repeated message on following points should be transmitted to the population:
 - personal hygiene
 - water consumption
 - use of boiled water and chlorine tablets
 - food consumption Avoid use of cheap ice creams, candles, food prepared and stored in the open.
 - Non-consumption of stale and overnight food, etc.
 - (v) Surveillance: A close watch is required to be kept so that any rise in disease can be detected at very early stage. This can be done only with a careful watch at the sub-centre level.

1. Early detection of rising pattern of disease

The rising pattern of any disease can be detected easily by keeping a watch at the sub-centre and PHC levels by noticing more number of cases with similar symptoms coming from a particular village or locality (say more than 5 persons/locality).

In order to operationalise the above arrangements, the following actions may be necessary:

- (a) Meeting of doctors and staff with district health officials for making them aware about the intentions;
- (b) Specific instructions with dos and don'ts to health officials upto the sub-centre level:
- (c) Weekly collection, compilation and analysis of information at PHC and District levels to identify rising trends. Information sought from sub-centre and PHC should be small in order to save time in filling forms;
- (d) Periodical inspections upto the sub-centre level by District officials.

2. Immediate Investigation and action on noticing rising patterns

In case of rising trend of diseases, arrangements for immediate investigation should be made. Investigation should include the following points:

(a) Actual assessment of the situation by the district health official:

- (b) Detection of the source of spread of infection by identification of mohalla, house, person;
- (c) Investigation of diseases like in case of diarrhoeal diseases by stool examination, stool culture, etc.;
- (d) Immediate isolation of the source of its treatment;
- (e) Requisition of special medical team for investigation from the District or medical colleges.
- 3. Preventive Measures Against Diseases: Details have already been emphasised earlier. Specific points are;
 - (a) Disinfection of water sources by chlorination at periodical intervals;
 - (b) Distribution of chlorine tablets to local population with necessary instructions for its use:
 - (c) Immunization against diseases for high-risk group population;
 - (d) In case of municipalities and notified areas, arrangements for proper disposal of water and human excreta;
 - (e) Publicity and health education with pamphlets, cinema projectors and newspapers about do's and don'ts;
 - (f) Health check up for high-risk group like children below 5 years, pregnant and lactating mothers and old persons in Anganwadis, Balwadis, Chaupala, schools, etc.:
 - (g) Close surveillance.

4. Immediate action in case of rising disease patterns

- (a) Arrangement for extra manpower/doctors, paramedicos and other staff;
- (b) Arrangement for quick mobility;
- (c) Sufficient drugs, vaccines and other medical stores;
- 7 (d) Arrangements for establishment of evacuation/isolation camps;
 - (e) Arrangement for close supervision and periodical evaluation and reporting.

5. Feedback information at various levels

Feedback information is extremely essential to keep close watch at different levels for timely action. Information from the field should be small and specific, so that the officials are not busy in filling forms.

(a) From sub-centre to PHC

- (b) From PHC to District.
- (c) At the District, between public health officials and district Medical Colleges authorities and District Collector.
- (d) From the District to the State Headquarters.
- (e) From the State Headquarters to the Centre (EMR Section-Tele. No. 3017302)
- (f) Establishment of control rooms at PHC, District and State Headquarters.

ADMINISTRATIVE ARRANGEMENTS:

1. Identification of Target Groups

In flood prone areas, villages and PHCs should be identified which are commonly affected by floods. Having done so, attention may be paid to target groups like children, pregnant and nursing mothers, old and infants, as they pose special health problems.

2. Procurement of Medical Stores

There is no need to stock a large quantity of a number of medicines. It is expected that only about 10% of the affected population may require medical treatment. Most common diseases are diarrhoeal diseases including gastroenterities, dysenteries and cholera, typhoid, infective hepatitis and later poliomyelitis. Other common diseases are respiratory infections, skin deseases, malaria and snkae bites. Medical stores should include disposable syringes also.

3. Disinfection of Drinking Water Sources and Frequent monitoring at Distribution Point like House, etc.

Necessary administrative measures may be taken to distribute chlorine tablets, spray of bleaching powder and estimate chlorine content of water at distribution points.

4. Immunization

It is better and cost effective to start immunization against certain diseases like polio and DPT much earlier, specially of children. In case of suspicion of rising pattern of disease, immunization should be initiated only in vulnerable groups in endemic areas, instead of going in for mass immunization, as there has been a lot of discussion in the scientific community about mass scale cholera immunization.

5. Establishment of Medical and Health Camps

In addition to the existing establishments like dispensaries, PHC, taluka, district and Medical College hospitals, arrangements for mobile and fixed camps may be planned in advance to render medical aid in flood affected areas where existing infrastructure is likely to be ineffective. Arrangements for transport facilities should be made for every medical health comp to transport critically ill persons to higher level referral centres.

DOCUMENT 21

6. Setting up of Epidemiological Surveillance:

Epidemiological surveillance should be set up through PHC and incidence of epidemic prone disease should be notified to the health authorities regularly.

7. Publicity and Health Education

Adequate publicity should be given to inform the people about the location of various medical and health camps and other medical units. People should be informed from time to time about the public health measures to be practised by them.

8. Monitoring and Review

- (a) A cell should be established under the charge of a senior officer in the Directorate of Health Services to exclusively monitor and review the public health measures in the affected areas in the State.
- (b) The epidemiological cell of the Directorate of Health Services should be alerted and asked to keep itself ready for any eventuality if any epidemic disease breaks out. The unit should also be asked to take anticipatory preventive measures in the form of obtaining information in respect of epidemic prone diseases, immunization of preventable diseases etc. The emergency drugs, vaccines etc. should be procured and kept ready.
- (c) Similarly, one officer should be identified at the District level to coordinate and monitor all public health measures for flood affected areas in the district.
- (d) The Directorate of Health Services should send regularly information to the Directorate General of Health Services where an officer has been earmarked to receive all the information and process the same for onward transmission to the Department of Health.

CHECK LIST OF POINTS FOR MONITORING ARRANGEMENTS FOR PUBLIC HEALTH & MEDICAL PROBLEMS IN FLOOD-PRONE AREAS

1. GENERAL

- 1. Have all the villages which are affected or are likely to be affected by flood been identified?
- 2. Has the requirement of medical and paramedical staff for attending to the health needs of flood-prone villages during the period been assessed?
- 3. Have the medical and paramedical personnel who may be required to be deployed been identified?
- 4. Have such personnel been given special training to attend to medical and public health problems which may arise in flood areas?
- 5. Have surveillance teams consisting of bacteriologists to conduct on-the-spot random stool examination been constituted?

- 6. Has the requirement of drugs, disinfectants like bleaching powder/chlorine tablets and vaccines etc. been worked out?
- 7. Has the availability of existing stocks been estimated?
- 8. Have arrangements been made for the procurement of additional stocks required?

2. ACTION

- 1. Has adequate publicity been given in the flood-prone areas on how to use the disinfectants and take other precautionary measures?
- 2. Have the anti-fly and anti-mosquito measures been taken?
- 3. Have the treatment centres been identified?
- 4. Do the villagers of each village know which treatment centre to go to in case of need?
- 5. Has the adequacy of the existing treatment centres been assessed?
- 6. If the additional treatment centres are required to be temporarily set up, have their locations been identified?
- 7. In case additional treatment centres are required, have the sources from which additional staff would be obtained been identified?
- 8. Has the availability of various drugs, vaccines etc. at such treatment centre been assessed?
- 9. Have arrangements been made to supply additional drugs and vaccines etc. in treatment centres where existing stocks are not adequate?

3. MONITORING

- 1. Has a senior officer in the Directorate of Health Services been identified to look after exclusively the problems of flood-prone areas during the flood season?
- 2. Have such officers been earmarked at the District and the Block levels?
- 3. Have such arrangements been made for feedback information from Health Centres to the Block, District and State Headquarters for periodical assessment of the situation and the availability of staff and stock position?
- 4. Do arrangements exist to report from the treatment centres to higher levels about any rise in the incidence of gastroenteritis, dysentery, cholera, jaundice and polio?

GUIDELINES FOR DROUGH:

Drought, whatever the cause, has continued unabated to ravage many nations in the world. It is true that many of the countries have suffered from drought, followed by famine, as far back as history can tell. The drought in the year 1987 was one of the worst disasters that had befallen India so far.

Drought is a protracted emergency, which invariably leads to shortage of food. The problem gets multiplied if poverty, illiteracy and backwardness are also associated. The impact is thus most in the sphere of nutrition in general and especially among children, lactating and pregnant mothers.

The estimated population of children in the age group below 5 years will be 17% and that of lactating and pregnant mothers will be 3.5% or in other words, 20% of the population will need special care immediately. It has also been noted that in the drought affected areas infant mortality is very high and incidence of water-borne diseases like diarrhoea and dysentery are also very high. Common types of diseases are as follows: unspecified dysentery; amoebic dysentery; relapssing fever and typhus; malnutrition; dehydration; respiratory infection like pneumonia, acute bronchitis, bronco/pneumonia, and whooping cough; various infectious diseases like measles and chicken-pox; skin diseases like secondary infected dermatitis and scabies; parasitic diseases like malaria and ascariasis and a complication of maluntrition which includes xerophthalmia, keratitis photophobia, depigmentation of hair and skin, dermatitis of the scrotum urogenital syndrome, mental apathy/ deafness due to neuritis, cardiac manifestation, acute conjunctivitis, relapsing fever and spontaneous abortion and miscarriages.

The undernourished and the starved are characterised by wasting of tissues, loss of all fat (adipose tissue); atrophy of skeletal muscles, overlying skin becoming wrinkled, loose and flabby and shrinkage of all viscera except brain, unitl a walking skeleton is left for the last, agonizing journey to death. For those, who survive the ordeal, the psychology and mental trauma of starvation lingers for a very long time after recovery. Long before death people become apathetic and uninterested in what is going on around them.

The most dramatic effect of famine is seen on small children. The smaller the child, the worst the effect. The breast-fed infant with the milk of its mother as the only source of sustenance starts to slow down in growth with no weaning food availabe and breast-milk production becoming inadequate. Following effects are

The child becomes inactive and cries persistently. The child growth is stunted and it becomes severely underweight until it literally becomes skin and bone, when it develops 'Marasmus' or severe PCM - Energy - Malnutrition. The child becomes apathetic, miserable, inert, withdrawn and anorexic. The face becomes puffy and swollen. Edema of the legs also develops. Distended and protruding abdomenis seen; The skin becomes hyper-pigmented and flabby while the hair loses its luster and turn brownish-red in colour. The child is said to have developed 'Dwashiorkor' - a disorder due to lack of proteins. The children are prone to episodes of acute diarrhoea measles and whooping cough which often cause fatality rates as high as 50% far in excess of what they would cause in normally fed children;

Vitamin A deficiency occurs and in its mildest form causes night-bilindness or at its worst blindness and dealth.

Although children may recover from the acute state of malnutrition if they receive additional and appropriate food in time, the long-term effects of these disorders result in deficient mental and physical development and is a matter of great concern. Several

studies of children who have recovered from severe Protein - Energy - Malnutrition have shown a lower IQ (Intelligence Quotient) compared to well-fed children from the same socio-economic background, while the working capacity in adults is markedly diminished.

The extreme and the classical movement of a whole population results in hazardous journeys. For the already weakened and the malnourished, these are often too much to bear and they die on the way from exhaustion, starvation and dehydration.

Many more come into contact for the first time with diseases such as malaria which may easily prove fatal as resistance is low. During me prolonged and severe famine situation, the following communicable diseases are rampant and rapidly reach epidemic proportions: Measles; Meningitis; Acute Diarrhoea and Dysentery; Typhus Relapsing fever; Viral hepatitis and Typhoid.

The spread of these diseases is often made worse by overcrowding and insanitary conditions. These develop, particularly, when starving people occupy temporary shelters on outskirts of cities and towns. In such circumstances, when camps after camps spring up every week, the burden on health resources often becomes unmanageable.

CONTINGENCY PLAN FOR MEDICAL CARE DURING DROUGHT

A cell should be established under the charge of a senior officer in the Directorate of Health Services to exclusively monitor and review the public health measures for the drought affected areas in the State.

The epidemiological cell of the Directorate of Health Services should be aletred and asked to keep itself ready to meet any eventuality if any epidemic disease breaks out. The unit should also be asked to take anticipatory preventive measures in the form of obtaining information in respect of epidemic prone disease, immunization of preventable diseases etc. The emergency drugs, vaccines etc. should be procured and kept ready. Similarly one officer should be identified at the district level to coordinate and monitor all public health measures for the drought affected areas in the district.

The Directorate of Health Services should send regularly information to the Directorate General of Health Services, where an officer will be earmarked to receive all the information and process the same for onward transmission to the Department of Health.

Children below 5 years, expectant and nursing mothers are the special victims of drought. Every effort should be made to reach these population groups on a priority basis. In the entire drought affected areas they will be around 20-25% of the total population. In addition, the aged, the infirm, the disabled and the destitutes will pose special problems during drought. The health officials should be instructed to look after these categories of people.

During drought, diseases like gastroenteritis, dehydration, pneumonia, cholera, typhoid, dysentery, measles, parasitic diseases and others including nutritional disorders will pose special problems. While working out the requirements for the drugs and vaccines, diseases listed above need to be kept in view. Adequate provision for antibiotics, ORS, Vitamins and other essential drugs need to be made.

All drinking water sources need to be identified and every efforts made to disinfect the same with chlorine or bleaching powder. It is preferable if it is done daily during the drought period to prevent onset of epidemic. However, depending upon the resources and the nature of water sources, this could be done two or three times a week under certain circumstances.

Every effort should be made to provide adequate bleaching powder and chlorine to disuifect the identified drinking water sourses.

Immediate steps need to be taken to project children and the pregnant women with the protective vaccine used for the programme through a special drive. All primary health centres should be provided with adequate stock of vaccines and instructed to carry out special immunization programme in respect of the identified population on a priority basis.

Adequate provision should be made to provide disposable syringes, needles, soaps, flasks, bags, towels and other equipment.

A massive programme to provide nutritional supplements like protein, vitamin A and minerals (Iron and Folic Acid) should be taken up. The same could be channelised through the I.C.D.S. Where ICDS is not there, the same nutritional supplement programme should be channelised through deployment of additional manpower and through the panchayats.

In addition to the existing established units of dispensaries, primary health centres, sub-divisional hospitals, medical and health centres, sub-divisional hospitals, medical and health camps need to be established to provide emergency medical care and other medicare services to the affected persons. Arrangements for transport should be made available for every medical health camps to transport critically ill persons to higher level referral centers.

During the drought a large number of cattle are likely to die because of non-availability of fodder. Special care need to be taken to protect these animals from diseases and death. Animal husbandry and veterinary department should be involved in providing relief measures through establishment of camps. During drought there is every possibility of a outbreak of epidemic diseases because of scarcity of water and nutritional deprivation. Therefore, effort should be made to set up epidemiological surveillance for epidemic prone diseases through the Primary Health Centres and the incidence of the epidemic prone diseases should be notified to the health authorities regularly.

Adequate publicity should be given to inform the people about the location of the various medical and health camps and other medical units and people should be educated to protect themselves against preventable diseases by accepting the immunization programme.

Storage of water is likely to lead to onset of epidemic diseases, particularly water-brone diseases, which may spread to other areas. Therefore, normal activities with regard to disinfection of water sources should be stepped up.

Evaporation leads to loss of around 30% of water in big reservoirs supplying water. Anti-evaporating agents like Centyl-alcohol are often used to prevent such water loss/direct evaporation.

CHECK LIST OF POINTS FOR MONITORING ARRANGEMENTS FOR PUBLIC HEALTH & MEDICAL PROBLEMS IN DROUGHT AFFECTED AREAS

1. GENERAL

- (1) Have all those villages which are affected by acute drinking water scarcity during the drought period been identified?
- (2) Has the minimum requirement of water during the drought period for the population of these villages been worked out?
- (3) Has the quantum of available water during drought period in these villages been estimated?
- (4) To make up for the shortage, have alternative sources of water for supply to these villages been identified?

2. PLANNING

- (1) Has the requirement of medical and para-medical staff for attending to the health needs of drought-prone villages during the drought-period been assessed?
- (2) have the medical and para-medical personnel who may be required to be deployed been identified?
- (3) Have such personnel been given special training to attend to medical and public health problems which may arise in drought areas?
- (4) Have surveillance teams consisting of bacteriologists to conduct on-the-spot random stool examination been constituted?
- (5) Has the requirement of drugs, disinfectants like bleaching powder, chlorine tablets and vaccines, etc., been worked out?
- (6) Has the availability of existing stocks been estimated?
- (7) Have arrangements been made for the procurement of additional stock required?

3. ACTION

(1) Has adequate publicity been given in the drought-prone areas about how to use the disinfectants and take other precautionary measures?

27

- (2) Have the anit-fly and anti-mosquito measures been taken?
- (3) Have the treatment centres been identified?
- (4) Do the villagers of each village know which treatment centre to go to in case of need?
- (5) Has the adequacy of the existing treatment centres been assessed?
- (6) If additional treatment centres are required to be temporarily set up, have their location been identified?
- (7) In case additional treatment centres are required, have the sources from which additional staff would be obtained been identified?
- (8) Has the availability of various drugs, vaccines, etc., at such treatment centre been assessed?
- (9) Have arrangements been made to supply additional drugs and vaccines, etc. in treatment centres where existing stocks are not adequate?

4. MONITORING

- (1) Has a senior officer in the Directorate of Health Services been identified to look after exclusively the problems of drought-prone areas during the drought period?
- (2) Have such officers been earmarked at the District and the Block levels?
- (3) Have arrangements been made for feed-back information from Primary Health Centres to Block, District and State Headquarters for periodical assessment of the situation and the availability of staff and stock position?
- (4) Do arrangements exist to report from the treatment centres to higher levels about any rise in the incidence of gastroenteritis, dysentery, cholera, jaundice and polio?



PROPOSAL FOR HEALTH SECTOR NATIONAL EMERGENCY PREPAREDNESS PLAN

Introduction

Human population is one of the most frequent targets of all the emergencies and disaster situations which hit them directly by causing injuries and death, indirectly by affecting services essential for human survival i.e. water, food supply and shelter or affecting sanitary and sewerage system, producing unsanitary conditions congenial for disease outbreak. In all such situations, public outcry and sufferings become the parameters of judging the disaster impact as well as the local infrastructural capabilities and capacity.

Outside assistance is usually not possible at least during the first 48 to 72 hours due to lack of timely information and communication breakdown. At the same time, local health infrastructure is also not adequately responsive due to the impact of the disaster on themselves, and limited availability of local resources and non-availability of contingency plan of action. The health sector contingency plan, therefore, becomes a priority action, during an emergency/disaster situation, particularly during the first few days of disaster impact.

In South East Asia, India is one of the most disaster prone countries. The wide variation in geographical and climatic conditions makes it more prone to natural disasters. Gradual expansion of industries makes it vulnerable to industrial hazards, while social and ethnic problems result in various types of man-made disasters. With gradual expansion of health infrastructure, epidemic situations are much less now but the potential danger still persists.

Disaster Vulnerability

By and large, in India all the 32 States and Union Territories are likely to face one or a combination of disaster situations like drought, flood, cyclone and earthquake. Based on information from the Ministry of Agriculture (Dept. of Scrarcity Relief), there are 24 States/UTs, which are most vulnerable. The following table illustrates this:-

Nam	e of the State/UT	Drought	Flood	Cyclone	Earth- quake	Total
1	Andhra Pradesh	Yes	Yes	Yes	No	3
2	Bihar	188	108	No	Yes	3
.3	Gujarat	Yes	No	No	No	1
.}	Jammu & Kashmir	Yes	Yes	No	No	3
Ď.	Haryana	Yes	No	No	No	2 Par
Ġ.	Karnataka	Yes	No	No	No	1
7	Madhya Pradesh	Yes	No	No	No	1
8.	Maharashtra	Yes	les	No	No	
9.	Rajasthan	Yes	No	No	No	1
10	Orissa	Yes	Yes	Yes	No	3
11.	West Bengal	Yes	Yes	Yes	Yes	-
12.	Arunachal Pradesh	No	Yes	No	Yes	1 25
13.	Assam	No	Yes	No	Yes	
14.	Himachal Pradesh	No	Yes	No	Yes	
15.	Manipur	No	Yes	No	Yes	
16.	Nagaland	No	Yes	No	Yes	
17.	Sikkim	No	Yes	No	Yes	
18.	Meghalaya	No	Yes	No	Yes	
19.	Andaman & Nicobar	No	Yes	Yes	No	
20.	Tamil Nadu	Yes	No	Yes	No	- 2
21.	Uttar Pradesh	Yes	Yes	No	Yes	
22.	Tripura	No	Yes	No	Yes	.)
23.	Mizoram	No	Yes	No	Yes	3
24.	Punjab	Yes	1'08	No	Yes	(3)
		1.4	18		10	

Out of the 32 State UTs, one State faces all the four types of disasters, 6 States face 3 types of disasters, 9 face two types of disasters of face one type of disasters.

According to another analysis, 14 States UT's are drought prone, 15 States UT's are flood prone, 6 States UTs are cyclone prone and 13 States UTs are earthquake prone

District Level Analysis

Drought: Out of 448 districts, 90 are under drought prone area programme and 21 under desert development programme. In Rajasthan and Gujorat, there are 73 blocks which are perennially affected.

Flood: There are 137 districts which are flood prone.

Cyclone Out of 32 States/UTs, 24 are more prone than others. Out of 443 districts, 271 are more prone.

To meet the challenge of emergency and disaster situations, the Government of India has identified the nodal Ministries to earmark responsibilities to the various concerned departments/and sectors and to coordinate the entire activities relating to specific types of disaster and also the support Ministry to develop sectoral contingency planning for implementation, monitoring and evaluation.

		Nodal Ministry	Support Ministry
Natural Disasters	;	Agriculture	Health
Chemical Disasters	:	Enviornment	Health
Nuclear Disasters	:	Atomic Energy	Health
Biological Disasters	:	Health	Public Health Engg.
Civil Strife	:	Home	Health

Helath Sector Responsibilities

Keeping in view the health sector involvement during the crucial stage of a disaster situation, the Government of India has assigned following responsibilities to the health sector:-

Drought; Flood; Cyclone; and Industrial Disasters.

The health sector emergency preparedness and response activities are conducted at national, State, district and Primary Health Centre levels. Actions during natural disasters and epidemic situations are regularly practised. A contingency plan of action for accidents from nuclear establishments is practised selectively by the Department of Atomic Energy in association with other agencies departments including Health which form the base for emergency preparedness and response. For industrial disaster, health sector offsite plan is yet to be developed on a countrywide basis, though the Department of Environment is taking necessary steps in this regard.

The Ministry of Agriculture, being the nodal Ministry, has identified the responsibilities assigned to health as well as other Ministeries and Departments. Based on the assigned task, following actions are taken:

(A) Pre-disaster phase

Es	sential Activities	National	State	District	PHC
1.	Participate in review meeting of nodal Dept/Ministry (Feb-March for drought & Flood).	Yes	Yes	Perhaps Yes	No
2.	Preparation and circulation of action plan with checklist	Yes	Usually No	Usually No	No

	3. Random review during official tours	Yes	Usually Yes	Usually No	No
	4. Pre-position of medical supplies	Yes	Yes	Yes	Usually Yes
	5. Contingency plan for additional manpower deployment	Usually No	Yes	Usually Yes	Ņo j
	6. Training of personnel for emergency operation	Very Infrequent	No.	No .	. No
(B)	Disaster Phase				
	Action	National	State	District	PHC
	1. Stimulus for Disaster action usually provided by the Min. Agriculture/IMD	Yes	Yes	Yes	Yes
	2. Control of Non-Communicable diseases	No	No ·	Yes	Yes
	3. Disaster Surveillance activity	Yes	Yes	Yes	Yes
	4. Mobilisation of resources	Yes	Yes .	Yes	Yes
	5. Continuous monitoring	Yes	Yes	Yes	Yes
	6. Involvement of NGO's	Yes	Yes ·	Yes	Yes
	7. Assessment of control measures	Yes	Yes	Yes	Yes
(C)	Post-Disaster Phase				
	Post Disaster evaluation and modification of existing plan based on experience	Yes (Ce ral tean with he expert as mem	n Yes alth	aally Usua Yes	ally No
	Post disaster document	Yes Only on cial requ ment No nical Se	uire-	No	No

By analysing the number of activities during various phases of disaster the following observations can be made:

(i) Pre-disaster:

(a) At the National level most of the action prior to, during and after a disaster are taken, except the training of personnel. Out of six pre-disaster activities three at the district and six at the PHC level are not performed. It means there is almost no preparedness activities at the PHC level which is required to function more effectively during the post - disaster period (first 48 to 72 hrs.) when outside help is not feasible due to communication breakdown.

(ii) During Disaster:

(b) At the National and State level, most of the action required are taken except control of non-communicable diseases which, anyhow, are not supposed to be performed by them. In contrast, all actions are taken by the district and the PHC level worker. It means that some type of health facilities are provided without any preparedness. This is the reason for ad hoc actions by the fielf worker, the quality of which may vary according to the initiatives taken by the workers who, themselves, are relatively fresh and inexperienced to handle such big problems of disease surveillance and control.

(iii) Post-Disaster:

At the National level, the post-disaster evaluation is mainly administrative and financial, and is undertaken to improve the performance next time. This is usually absent at the State, district and PHC level.

Technical evaluation is not done at all at any level. It means that the experience gained reamin unutilised for the next disaster situation. Moreover, the tendency of adhoc responsee increases in the minds of peripheral workers.

Biological disaster (Epidemics and Poisoning)

The Government of India has outlined detailed guidelines and activities at different levels of administration, after extensive discussions with experts from all over the country. Implementation of these guidelines at the State, District and particularly PHC level is hardly undertaken as it needs strengthening of health infrastructure and training of field workers for which adequate resource allocation has not been made.

Nuclear Disaster

Detailed action plan has been drawn up by the Department of Atomic Energy for areas around nuclear installations in the country. Simulation exercises are also being conducted at regular intervals with involvement of local health authorities. It may, however, be necessary to involve the national and State level health authorities to make existing nuclear disaster management plan more effective. Health, being a separate department, dual authority during any eventuality may create confusion and tendency towards shifiting of responsibilities.

Industrial Disaster

The Department of Environment is the nodal Ministry for industrial disasters. It has identified areas having maximum number of industries and also products manufactured in these industries. (Each) industry has developed a detailed onsite plan to contain industrial hazards inside the industrial complex. Offsite plan and other activities relating to the health sector are yet to be prepared.

Performance Review

The disaster management practice in India has been widely appreciated all over the world and is being improved every year. Adminstrative tie-ups, coordination and communication mechanism have been well established. A plan of action has also been clearly outlined. Logistics are kept in strategic position in advance as per the disaster preparedness plan. There are still a lot of gaps technically, in particular at the grass root level in the health sector. The main reason appears to be lack of orientation to cope up with the sudden and enormous health impacts produced in a disaster situation with meagre resources available locally at the time of disaster impact when they themselves are affected. Some of these problems are outlined below:-

(i) Anticipation of Problems

The health impact of different types of disasters is known vaguely and sometimes by experience to the field workers. Young medical and para-medical workers, particularly, feel very insecure in such a situation. As a result, the technical actions are mostly adhoc in nature, with hardly any scientific basis. Sometime, the action do not infuse confidence in the local adminstration as well as local community. Usually, in such a situation, serior health managers like the point Directors and Deputy Directors, are sent to disaster affected areas. As a result, the grassroot level health workers develop the habit of taking instructions from senior officials. Self-confidence to deal with such a situation hardly develops. Moreover, acquisition of experience among the field workers is dependent on the experience of senior officials and not on scientific basis.

(ii) Investigative Practice in case of Potential Epidemic Situation

Though the Government of India has provided detailed advance action plan about biological disasters situation, it is usually not practised at the field level. It may be necessary to organise orientation and training programmes for the health managers and field workers in the health sector to clearly explain the methodology to practise the contingency plan.

(iii) Medical & Public Health Supplies

Though adequate medical supplies are kept for disaster situation. they are always over-estimated and over-stocked. Quantification of supplies is possible, for which procedures have to be laid down with clear understanding for the district and field officials. This would reduce insecurity of non-availability of supplies.

35

(iv) Other Supplies

Medical personnel usually face certain constraints in getting transport and communication facilities from local administration. It is mainly because of lack of understanding of public health problems by non-health managers. It may be necessary to orient non-health administrators about the health impacts so that adequate support to the field staff can be provided smoothly and automatically without any delay.

(v) Lack of Disaster-related Information

The adhoc response results in compilation of usually wrong and deficient statistics at the field level and sent to the district level. Such actions are mainly defensive in nature and aim usually at hiding infomation about the rising pattern of the diseases. The system of verification of these of statistics is usually on paper. Correct done measures can be taken, if the district and field workers are aware of the anticipated problems and remedial measures. Feedback information to field workers after analysis about correct situation and possible reasons will make a difficult job more interesting.

(vi) Lack of Coordination between Different Agencies

A number of voluntary agencies like the Red Cross, Shri Ramakrishna Mission, etc., organise health-related activities during a disaster without any cooperation and coordination with each other. A coordinated approach is possible, provided the district chief takes the lead and earmarks areas of operation. This is possible only when the voluntary organizations are involved at the planning stage during the pre-disaster period.

Remedial Measures:

Since independence, the country has developed a wide network of health infrastructure upto the subcentre level, covering upto 5000 population. The hospital services have also been extended at least upto Taluka level. At some places, this facility has been developed even below the Taluka level. Similarly, other activities of the health sector like drinking water supply, food supplies, sanitary and sewerage system have also expanded. Additionally, a large number of voluntary agencies are involved in expanding the health sector facilities.

In order to meet the challenges of disaster emergencies, it may be necessary to utilise these services on a scientific basis for which the following actions will be necessary:

- To identify high risk districts:
- To prepare a local contingency action plan based on national plan: and
- To train local health officials to undertake immediate action to reduce morbidities and mortalities with available resources by prioritising action.

National Plan:

In order to overcome the shortcomings mentioned above, a National Plan will be necessary to avoid adhoc response leading to chaotic and direction-less emergency operation in the health sector. Keeping in view the crucial role of health services during the immediate post-disaster situation, with insufficient time during the warning phase, it may be necessary to initiate emergency preparedness activities during the pre-disaster period to provide timely health response.

The objective of a National Disaster Plan in the health sector is to provide timely, appropriate and adequate health facilities to the affected people, and secondary prevention as well as prevent affect of method disaster (primary prevention) -

To provide timely health facilities during the disaster and the post disaster periods, the following action will be needed:

- (a) Identification of disaster prone areas and its population (Blockwise at the district, districtwise at the State and Statewise at the National level);
- (b) Identification of disease pattern of the high risk areas;
- (c) Identification of factors responsible for aggravating disease during disasters:
- (d) Identfication of the number and location of the health facilities in high risk areas:
- (e) Location of manpower available in the area (both general and specialised);
- (f) Arrangement for the training of personnel—medical and para-medical at operational and the managerial levels to explain the details of contingency plan;
- (g) Preparation of a contingency action plan with specific responsibilities assigned to specific persons.

For the organisation of emergency medical and public health relief, the following action will be needed:

- (a) Identification of the list of medical supplies based on prevalence of diseases:
- (b) Based on past experience, quantification and stockpiling of the emergency supplies at the district and PHC levels;
- (c) Preparation of the list of mobile teams consisting of medical and para-medical personnel for deployment on short notice;
- (d) Provision of support facilities to local health authorities for transportation of manpower and supplies and communication from the field to the district head-quarters;
- (e) Arrangement for disease surveillance activities and health information feedback as laid down in the contingency plan for Biological disasters;
- (f) Arrangement for treatment of injured patients at the PHC and district, taluka and other hospitals;

37

- (g) Arrangement for rapid health assessment within two days of disaster situation by a team of district/State level experts for analysis of disease pattern and suggesting remedial measures;
- (h) Arrangement for case studies and also to conduct operational research.

In order to achieve the above-mentioned objectives, the following will be carried out:

a) Identification of focal point at the State level in the Directorate of Health Services and at the district level in the Office of Chief Medical Officer:

In most of the States, there is one post of Deputy Director/Joint-Director in the Directorate of Health Services, exclusively for looking after Civil Defence and related activities. They could be made responsible for all matters relating to emergencies/disasters. In view of the essential disaster relief activities as mentioned earlier, the focal point in the health sector will remain occupied throughout the year during predisaster, disaster and post-disaster phases.

In those States, where such a post is not available, the establishment of a full-time post will be needed. However, at the District level, the District Health Officer may be identified as the focal point.

b) Technical support to focal the points:

FMR?

The technical unit in the Directorate under the focal point consisting of three to four persons will undertake the following activities:-

- · Collection, compilation and analysis of disaster-related information;
- Development of health sector contingency plan;
- Provision of assistance for coordination between district the agencies within the health and other sectors;
- Conducting disaster response activities (relief and assistance);
- Day-to-day monitoring (Operationalisation of Control Room);
- Provision of assistance for training and research activities.

With assistance of State level medical colleges, a panel of experts and institutions (medical college) in various health-related activities will be drawn who will help in the following areas:- Expert advice; Undertake training programme; Undertake case studies and operational research; Help the State in post-impact evaluation of health sector preparedness and response measures. Orientation programme is needed for officials involved in disaster/emergency management. These institutions may undertake training programme for policy planning at managerial and operational levels.

c) Administrative Support:

The State as well as the district level emergency units will need support in terms of: Computer, Access to existing health information system; Telecommunication and Transport. Each district unit must be provided with a contingency fund of Rs.20,000/- per disaster to be utilised for any unforeseen situations. Similarly, each State Unit must be provided Rs.1.00 lakh per annum for similar purposes. In order to undertake timely action, delegation of financial power to focal points must be made in advance.

Identification of National and State teaching institutions for orientation/training of medical and para-medical personnel.

Strengthening of District Hospitals by providing intensive care unit facilities (at least 2 beds) in disaster-prone districts, etc.

Strengthening of epidemiological assessment unit under District Health Officer.

FINANCIAL OUTLAY FOR THE FIVE YEARS

	(in million US\$)
Human Resource Development	10.00
Operational Research	00.50
Data Base	00.50
Coordination Monitoring	02.50
Community Awareness	03.00
	16.50



DISASTER PREPAREDNESS IN WEST BENGAL

A Case Study by

ALL INIDA INSTITUTE OF HYGIENE & PUBLIC HEALTH, CALCUTTA

In response to the proclamation of the decade 1990s as the International Decade for Reduction of Natural Disasters (IDNDR), the Department of Emergency Medical Relief (EMR), in the Directorate General of Health Services organised a National Workshop on Disaster Management in the All India Institute of Hygiene & Public Health (AIIH & PH), Calcutta in 1989 as the first endeavour in relation of mangement of disaster. This Institute, being a pioneer in public health and a National Institute of excellence — for that matter in the Eastern world — functions with the main objective of manpower development in public health and research in the area of preventive medicine, both basic and applied.

ACTIVITIES AND ACHIEVEMENTS IN 1991

(a) Disaster Preparedness Status Survey

Subsequent to its recognition, the AIIH & PH, Calcutta was entrusted with the responsibility by the Government of India to conduct Disaster Preparedness Status Survey in the States prone to natural disasters and training programmes in the Eastern and the North Eastern States of the country.

(i) Objectives of the survey

- 1. To examine the disaster preparedness status of the State and to identify the weakness, if any, in the action plan so as to take appropriate measures to strengthen the same;
- 2. To identify the training needs and training areas so as to undertake effective training programme in order to strengthen the disaster preparedness plan;
- 3. To establish computer-based disaster data centre for networking of information, nationally and internationally.

(ii) Survey methodology

1. Identification of natural disaster prone districts in the State in consultation with the State Government authorities and selection of districts which faced any kind of natural disaster during the last few years;

- 2. Identification of disaster prone blocks in the selected districts which faced natural disasters during the last few years and to select two blocks in each of the selected districts;
- 3. Identify disaster prone villages in each of the selected blocks which faced disaster during the last few years and to select two villages in each of the selected blocks;

2. Development of survey instruments

The following questionnares/schedules were used for collection of data related to disaster preparedness and disaster events:

- i) State Schedule
 - (a) Government organisation: for collection of information in respect of different voluntary organisations working in the State and participating in disaster management.
 - (b) Non-Government Organisation: for collection of information in respect of different voluntary organisations working in the State and participating in disaster management.
- ii) District schedule: At the district level, the authorities to be contacted/interviewed to get their opinion and relevant information are C.M.O. or the district level programme officer related to health, District magistrate (DM) or the district level coordinating officer for disaster preparedness planning/management and Zila Sabhadipati (Panchayat Head)
- iii) Block schedule: Block level officers to be interviewed in the selected blocks are:
 - (a) B.D.O. or the Block level coordinating officers nominated for this purpose;
 - (b) Block Medical Officer or the block level programme officer related to health:
 - (c) panchayat Sabhapati of the block;
- iv) Schedule for villages: Authorities to be contacted are Panchayat Pradhan and Local non-formal leader, one each in each village.
- v) Family schedule: Heads of selected families are to be intereviewed for elicting relevant information.
- 3. **Method of data collection:** Retrospective and cross sectional type of data by interview method and record analysis.

a. Disaster Preparedness Status in West Bengal

Eleven districts were identified in West Bengal for survey, of which 9 were flood prone and 2 drought prone. An indepth survey was undertaken following the above survey methodology covering 11 districts, 20 blocks, 40 villages and 400 families. The field work was started in May 1991 and the survey report was prepared in Sept. 1991. The

report highlighted the preparedness status of the districts through "Matix Score Measures" as well as weaknesses in the preparedness plan. The report contained several recommendations/suggestions for strengthening the contingency plan of the State and highlighted the burden on the exchequer on account of recurrent losses due to disasters in the State and relief measures undertaken.

b. Development of Computer Software for computer data base in respect of disaster events and information networking

Software was developed by the AIIH & PH for computerisation of relevant information on disaster events collected during the survey in respect of West Bengal. This was demonstrated to the computer expert who came from WHO collaborating Centre, Belgium for imparting training in use of computers in disaster management. The Ministry of Agriculture, Government of Inda, (Nodal Minsitry for disaster management in India), recognised the importance of the survey report and requisitioned several copies of the Report for circulation among different States.

c. State level workshop on disaster preparedness in West Bengal

The workshop was organised by the AIIH & PH in October 1991, which was attended by the District Level Officers connected with disaster management in the disaster prone districts which were covered for the status survey. Senior Level officers in the district, not only related to health but also to other areas of administration like the District Magistrate, besides representatives of Panchayats attended the workshop. State level officers from diffferent departments viz., Health, Relief, etc. were alsos the participants. National experts on disaster, representatives from WHO and the Collaborating Centre, Belgium interacted with the participants. Their interaction helped in identifying the training needs and formulations of the training curriculum (capsules) for use in the future training programmes for State/District/Block-Level officers. The survey report, first of its kind in India, was also presented to the workshop for a critical appraisal. The Report received wide coverage in the mass media.

D. Organisation of Training Programme

- (i) Course objective: The overall course objective of the training programme is to develop adequate advanced skill needed to prepare a realistic, implementable contingency plan for disaster management.
- (ii) Educational objectves:

At the end of the course, the participants are expected to:

- (a) Carry out hazard mapping in relation to disaster preparedness:
- (b) Formulate effective as well as realistic strategies to minimise the risk, endangering life and health as well as properties, through involvement of appropriate sector/sectors;
- (c) Evolve action plans for rapid assessment of the need and quick responses during disaster phase;

- (d) Identify managerial process involved in intra and inter sectoral coordination in relief management;
- (e) Establish a system of surveillance in relation to epidemiological, entomological and nutritional aspects.
- (f) Manage the resources needed for preparedness in pre-disaster, disaster and post disaster phases, particularly for reconstruction and rehabilitation.

(iii) Course curriculum was designed in two forms

- (a) General capsule containing the conceptual and historical background, underlying the principles of planning and management in relation to disaster mitigation programme;
- (b) Specific capsules dealing with specific sectoral training e.g. health, environment, agriculture, irrigation and waterways and animal resource development, etc.

(iv) Teaching technology

The training programme includes lectures and sessions, group discussion, demonstration with slides and video films, problems-solving exercises, presentation of acase studies and experience-sharing sessions, followed by a panel discussion towards the end of the session for interaction among different sectors regarding very sensitive issues of coordination of action programme in disaster situation.

E. Development of teaching materials

Following teaching materials were developed by the AIIH & PH:

- 1. Video film-case study on disaster preparedness status in some districts of West Bengal;
- 2. Slides depicting different phases of disaster and relief operation;
- 3. Posters depicting educational messages for community awareness regarding disaster preparedness;
- 4. Literature and relevant current national and international documents on disaster preparedness and management.
- 5. Matrix Score Model for evaluation of the status of disaster preparedness of States/Districts.
- F. District Level Training Course for North Eastern States of India (sponsored by Rural Division of Ministry of Health & Family Welfare, Government of India and WHO (9-13 Dec. 1991)

The course was tailor-made to suite the specific role that the district based medical officers have to playin the prevention as well as the management of crisis situation.

arising from a disaster. The topic chosen and the curriculum designed were meant to enhance the knowledge, as well as the skill, in the magagement of disasters. Training was imparted using the training module and materials developed by AIIH & PH, as a model.

G. Seminar on Community Preparedness in disasters management organised in collaboration with Indian Public Health Association, West Bengal Branch in Madhyamgram Primary Health Centre, Barasat 24 Paraganas, South).

The participants in the seminar were community members, panchayat members, district level medical officers, local medical partitioners and medical and paramedical staff of community, aware of the process of preparedness and their role during disaster events. About 1000 participants attended.

- H. Disaster Management Squad: During the severe flood disaster in some districts of West Bengal, viz., Malda, Murshidabad and West Dinajpur, the Disaster Management Squad, formed by the AIIH & PH visited these districts and studied the factors responsible for such disasters, the methods adopted for rapid assessment of the needs upto the grassroot level and the mechanism of quick response.
- I. Publication of Newsletter of the AIIH & PH viz "NEWS FROM"

First newsletter of the AIIH & PH named as "NEWS FROM" was published and the same was widely circulated.

ACTIVITIES AND ACHIEVEMENTS DURING 1992

- A. Organisation of Orienation Training Programme in relation of disaster preparedness status survey in the following States:
 - i) Assam

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The Workshop cum training programme was organised at the State Capital of Assam (Gauhati) during 27-28 April, 1992. The objectives of the workshop was to make the State level as well as the district level officers both in health and non-health sectors involved in disaster management in the State to make them aware of the commitments towards reducing the natural disaster events - for that matter, their impact - and to train the members of the survey team so that the survey can be carried tout perfectly in collaboration with the State Government. The State Health Minister inaugurated the programme and the Minister Incharge of Relief delivered an address as Chief Guest. The Chief Secretary, the Health Secretary and the Director of Health Services of the Assam Government took keen interest in the workshop, actively participated in the programm and gave all support. The Driector of Health Services organised the workshop on behalf of the AIIH & PH. The WHO Representative to India participated and delivered the key note address.

ii) Bihar

A workshop cum training programme on disaster preparedness and status survey was organised in the State Capital, Patna, during 13-14 May 1992.

About 60 participants including State and district level officers both from the health and the non-health fields as well as experts interacted.

The objective of this workshop was to make the participants aware of the disaster preparedness status of the State in relation to the need for strengthening the same for fulfilling the commitment to reduce the impact of natural disaster effectively and also to train the survey team for status survey.

The Minister in-charge of Health in the State Government inaugurated the programme and the Minister of State of Health delivered a speech at the inaugural session. The Principal of the Patna Medical College was the chief guest and the Joint Director of Health Services, in the absence of the Director, actively participated and organised the programme on behalf of AIIH & PH.

iii) Orissa

A workshop cum training programme on disaster preparedness and status survey in Orissa was organised in the State capital, Bhubaneswar, from 9-10 June, 1992. The objective of the workshop was to take stock of the disaster preparedness programme in the State vis-a-vis the awareness regarding the commitment towards reducing their after effects. The participants numbering about 60, were from the State and the district levels belonging to both health as well as non health sectors including the State level experts and other resource persons. The Relief Commissioner inaugurated the programme and the Joint Director of Health of the State organised the programme on behalf of the AIIH & PH. Dr. Gouri Gupta for WR Office and Ms Hellen Paulene from WHO SEARO participated as observers.

B. Disaster Preparedness Status Survey

Disaster preparedness status surveys were undertaken in the following states:

ASSAM

No. of districts selected	:	13
No. of blocks selected	:	26
No. of villages selected		52
Date of commencement	:	11.5.92
Date of completion	•	26.5.92
Scrutiny of schedules		27.6.92
Analysis is in progress		

BIHAR

District	•	11
Blocks selected	:	22
Villages selected	:	44
Date of commencement	•	15.6.92
Date of completion	*	12.7.92
Date of Scrutiny of schedule Analysis of data is in progress		7.9.92

ORISSA

District selected : 9
Blocks selected : 18
Villages selected : 36
Date of commencement : 20.6.92
Date of completion : 28.6.92
Date of scrutiny of schedule : 14.9.92
Analysis of data is in progress

C. Seminar on "Health Aspects of Disaster Management" (8 Jan. 1992) was organised at National Medical College, Calcutta in collaboration with Indian Association of Preventive & Social Medicine, West Bengal Chapter.

The objective of the seminar was to develop interest and skill in disaster epidemiology and other aspects of preparedness in relation to natural disaster among the interns of the Medical Colleges. About 70 doctors including interns, house-surgeons, faculty members and members of IAPSM attnded it.

D. Senior Level Officer Training Programme in Disaster Management in West Bengal sponsored by Government of India/WHO (14-16 January 1992)

The programme was inaugurated by the Minister In-charge of Relief and Welfare, Government of West Bengal. About 100 participants actively participated in the programme including faculty and resource persons. The WHO Representation to India and the Joint Sectretary, Ministry of Agriculture, Government of India delivered key note addresses and interacted with the participants.

- E. Seminar on "Decade of Reduction of Natural Disaster Strategies", (1.2.92) organised at N.R.S. Medical College, Calcutta in collaboration with Indian Public Health Assoiciation, South Dum Dum Paikapara local Branch. About 70 participants interacted including community physicians, members of IPHA, interns of the medical college, doctors and faculty members of the PSM Department.
- F. Seminar on National Disaster Preparedness in relation to natural disasters organised in collaboration with Indian Public Health Association, West Bengal Branch during its 36th Annual Conference at Salt Lake City, Calcutta (14-16 Feb. 1992).

The objective of this seminar was to arouse consciousness among different categories of personnel working in the health field viz. social workers, health educationists, environmental scientists, meteorologists, health economists, bio-statisticians, paedeatricians, clinicians, public health practiioners, epidemiologists, etc., so as to includate the skills for effective coordination of their activities during all the three phases i.e., pre-dsaster, during disaster and post-disaster. There were about 300 participants drawn from different States of India, who were members of the Association and working in the Health departments.

G. Workshop cum Training Programme on Disaster Preparedness and Response for Eastern and North Eastern Region (25-29 May 1992). The programme was sponsored by the Ministry of Agriculture. Government of India. The programme was inaugurated by the Minister In-charge of Rural Development, Government of West Bengal.

The partcipants were mostly State Level and District Level Government Officers from Assam, Bihar, Nagaland, Orissa, Sikkim, Tripura and West Bengal. The resource persons were the faculty members of the All India Institute of Hygiene and Public Health, Calcutta, senior officers from different departments of the State Government, Geological Survey of India, Veterinary Research Institute, National Infromatics Centre, etc. The Chief Secretary of the Assam Government, being one of the experts in disaster management, delivered the key note address.

H. Installation of Computer in the AIIH & PH and Training in Computer Application in development of Disaster Database :

A PCAT/386 given by the WHO, has beeen installed in the AIIH & PH. The first training course was conducted by experts from CRED, Belgium from 19-24 January 1992. About 30 trainees from different departments of AIH & PH were imparted training on computer use in devloping disaster database. They also discussed about development of software for such database indigenously with the help of local computer experts. The DMC has developed software, A database, on the basis of the Preparedness Survey in West Bengal, has been prepared using this software.

- I. Newsletter of the AIIH & PH "News From" January 1992 issue was published.
- J. Action for development process of the AIIH & PH
 - A) Manpower

Two post-graduate (MD PSM) students were recommended for training in Disaster Management at the Centre for Research on the Epidemiology of Disasters, WHO Gollaborating Centre, Belgium. One student finally visited the Centre for training for three weeks from 27 July to 7 August 1992. The course, she attended, was the 4th International Course on Health and Disaster Preparedness, which included topics like Emergency Response. Preparedness Planning, Disaster Planning, Disaster Management, Psyco-social effects of Disaster, Chemical Accident, Case studies on Earthquake disaster and famine disaster. She was also given an esposure to computer training and use of computer in disaster management.

.B) Logistic support

- i) The WHO Representative to India supplied one Xerox machine, one Overhead projector and one Slide projector in addition to the P.C.
- ii) Separate enclosure for the AIIH & PH has been made in the P.S.M. Department.
- iii) Documentation Centre

Publications, newsletters, review papers and books on disaster management have been enlisted and kept in the documentation centre situated in one portion of the master library of the Institute. Apart from this, a departmental library, consisting of all the publications, reports, review papers, slides and video film as prepared by AIIII & PH. is situated in the Disaster Management Centre.

iv) The training class room for disaster preparedness/management training is being modernised with audiovisual aids.

47

C) PARTICIPATION/PUBLICATIONS

- 1. Keynote address on "Community Preparedness in relation to Disaster Management" organised by IPHA at their Foundation Day Celebration at Madhyamgram Primary Health Centre, Barasat, 24, Paraganas (South), W.B.
- 2. Keynote address on health aspects of Disaster Management seminar organised by IAPSM (W.B.) in Calcutta National Medical College Auditorium.
- 3. Keynote address on "Strategies and Programmes for Reduction of Natural Disaster" seminar organised by IPHA (Lake town branch) at NRS Medical College, Calcutta.
- 4. Paper presented on "Model for assessing the Status of Disaster Preparedness" in the 36th All India Annual Conference of Indian Public Health Association at Sal Lake, Calcutta.
- 5. Participated as Chairman for the Panel Discussion on "Role of Mass Media in Natural Disaster Reduction" organised by the Science News Association in Bose Institute, Calcutta (28.6.92).
- 6. One of the panelists on the subject "Strategies for Natural Disaster Reduction" in the seminar organised by the Department of Science and Technology, University of Calcutta (28.5.92).
- 7. Keynote address on "Role of NGOs in the management of Natural Disaster" in the seminar organised by CASA.
- 8. Presentation of case studies on disaster management in the scientific programme organised by the Hygiene Institute Alumni Association in the Auditorium of AIIH & PH, Calcutta.
- 9. Paper presented in the Core Faculty Training Workshop (August 29 31 1991) organised by National Teacher Training Centre, Jawaharlal Institute of Postgraduate Medical Education and Research, Pondicherry.

IV REMAINING ACTIVITES DURING 1992

- A. Publication of reports of Disaster Preparedness status surveys for the States of Assam, Bihar and Orissa.
- B. Senior Level Officers (State/District level) training programme for disaster preparedness and response. The dates have already been fixed as under:

i) Bihar : 3 - 5 Nov. 1992

ii) Orissa : 30.11.92 to 2.12.92

iii) Assam : 14 - 16 Dec. 1992

- C. Publication of Proceedings of the workshops and training programmes of the above three States.
- D. Preparation of computer data base in respect of disaster events and relief activities in the States of Assam, Bihar and Orissa.
- E. Training programme on disaster preparedness and response for district level officers of North Bengal districts of West Bengal.
- F. Workshop on the development of computer software for disaster database and standardisation of the questionnaire for collection of disaster events and preparedness/management programme (Nov. 1992).
- G. Preparation for observation of IDNDR day in December 1992.
- H. Preparation of training module in consulation with NGOs having experience in disaster management (28.9.92)
- I. Publication of "NEWS FROM"

V DEVELOPMENTAL PROGRAMME AND REQUIREMENTS FOR THE CENTRE

1. Activities during 1993

- Support and organise disaster management status survey in North Eastern States of India(Manipur, Nagaland, Meghalaya, Arunachal Pradesh and Tripura).
- b) Organise pre-survey workshop in the above States and conduct, during disaster, case studies and post -disaster evaluation.
- c) Organise training programmes on disaster preparedness in the above States.
- d) Maintain linkage between the DMC and other national and international disaster management centres for exchange of information; support collaborative research activities to strengthen the disaster management programme; planning for organisation of the International Workshop on Disaster Preparedness specially for SAARC countries; establishment of "Poison Control Centre"; organisation of workshop on Technological Disaster and Emergency Medical Services.

2. Activities during 1994

- a) Organise pre-survey workshop in other States of India viz., U.P.,M.P., Andhra Pradesh, Tamil Nadu and Rajasthan.
- b) Carry out Disaster Preparedness Status surveys in the above States.
- c) Organisation of International Workshop on disaster preparedness and computer database on disaster events for SAARC countries.
- d) Organisation of workshop for finalisation of the questionnaire for collection of information on disaster events.
- e) Establishment of training for Emergency Medical Services in Calcutta.
- f) Organisation of training programme for Technological Disaster in West Bengal.

3. Activities during 1995-2000

- a) Formulation of training manual as well as development of training kits for all levels of workers, applicable for effective management of natural as well as man -made disasters;
- b) Monitoring of the impact of various training programmes organised by DMC:
- c) Standardisation of the software for development of disaster database on the basis of past experience and strengthening of the disaster database.

4. Expansion of the Centre

The activities of the DMC will be expanded in the following areas:

a) Management of Technological Disaster - an exploratory workshop to be organised in Nov - Dec. 1992.

- b) Establishment of "Poison Control Centre" and "Emergency Medical Services" for Calcutta.
- c) Preparation for organising International Workshop on Disaster Preparedness for SAARC countries.
- d) Organisation of Regional Workshop cum training programme on Disaster Preparedness for the Northern districts of West Bengal.
- e) Appraisal of survey reports of Assam, Bihar and Orissa and training of State and district level officers of above States.
- f) Preparation of National Disaster Manual based on the experience gathered from the survey reports of different States. This is expected to be done during 1995.

5. Requirements for the Centre

- 1. Separate accommodation for:
 - a) Research cum survey division:
 - b) Monitoring and evaluation:
 - c) Manpower development training division:
- 2. Disaster Data-base division Information centre
 - a) Computer centre for:
 - i) Networking of disaster events
 - ii) Poison control programme
 - b) Communication facility like Fax/modem and separate telephone line for installation of above.
 - c) Training facilities:
 - i) For preparation of training materials: video camera, still camera and projection equipment.
 - ii) Magnetic display board:
 - d) Manpower development for the Centre:
 - i) Opportunities for attending training courses on Disaster Management/Preparedness and exchange of views nationally and internationally.
 - ii) Staff for the DMC:
 - 1. Two Senior Research Officers(Medical)
 - 2. One Computer operator cum programmer:
 - 3. Secretary cum Stenographer:
 - 4. Three consultants:

Consultancy services from experts, oriented towards disaster preparedness planning for preparation of National Disaster Manual. The consultant may be specialist in community medicine, epidemiology, communication and behavioural science.

REPORT OF THE ACTIVITES OF THE JIPMER CENTRE

The JIPMER was identified as one of the Centres for Disaster Preparedness Training by the Directorate General of Health Services. The WHO provided funds during 1990-91 for the development of the Centre.

The following are the responsibilities of the JIPMER Centre:-

- 1. Training of trainess;
- 2. Development of curricula for the training of medical and health personnel:
- 3. Collection and dissemination of information.

In pursuance of the above, the JIPMER Centre prepared a plan of action, meant to fulfil the following objectives:-

- 1. To organise training programme for key training personnel at the State/District levels in the field of Disaster Preparedness;
- 2. To develop curricula and training materials in disaster preparedness for use by the health personnel and other workers at different levels;
- 3. To create a resource centre for promoting educational and training activities in the field of disaster management.

The progress made by the JIPMER Centre so far to fulfil the above objective are as follows:-

1. Formulation of a working group:

The working group consists of members from multi-disciplinary faculty drawn from the Departments of Medicine, Surgery, Orthopaedic Surgery, Pathology, Anaesthesiology and Community Medicine. Many of them are also faculty members of the National Teacher Training Centre (NTTC) and have rich experience and training.

2. Faculty Development:

a) It was necessary to develop a core faculty which would undertake the training programme to develop curricula, etc. Therefore, a workshop for training the Core Faculty of JIMPER was organised from 29 ghe to 31st August, 1991.

- b) A report on the proceedings of the core faculty training workshop on disaster preparedness was published in December, 1991.
- c) It is proposed to send two faculty members for further training at the International Workshop on Prevention and Control of Traffic Accidents and Injuries at Indian Institute of Technology, New Delhi, from 24th November, 1992 to 3rd December, 1992 and Chemical Disaster Workshop at Bombay.

3. Site Visits

Three site visit studies were made between September to December, 1991 at:

- Hyderabad and Vishakapatnam in Andhra Pradesh;
- Karaikkal in Pondicherry;
- Madras in Tamil Nadu;

During the visits, meetings were held with the Government officials and N.G.Os. regarding disaster preparedness and the steps taken for the relief, rescue and rehabilitation during cyclone and floods in these States. The site visit report is in ANNEXURE I.

- 4. Dr. D.B. Bisht, Director, Programme Management (SEARO), WHO, New Delhi, visited the Centre on 20-10-91 and held discussions regarding the activities of the Centre.
- 5. Dr. D.K. Srinivasa, Project Officer, NTTC, participated in the State Level Workshop on Disaster Preparedness Programme in West Bengal from 8th to 10th October, 1991 as a resource person at the All India Institute of Hygiene and Public Health, Calcutta. He presented a paper "Formulation of Training Curricula and Training Modules for officials and Communities in relation to Disaster Preparedness".
- 6. To develop library and documentation facilities, the Centre has been collecting various reports, publications, etc., from different agencies.
- 7. The Centre organised a planning meeting on Disaster Preparedness Training from 16th to 18th September, 1992. The purpose of this meeting was:
 - a) to prepare a need-based training schedule, session-wise for the key training personnel;
 - b) to decide the most suitable content, i.e., subject details for the sessions;
 - c) to agree on the nature of the training programmes.

Twenty four participants attended the meeting and they included officers from Indian Army, Government of Tamil Nadu and N.G.Os. from Shri Ramakrishna Mutt, Community Health Cell, PREPARE, and National Amateur Radio Operation (HAM RADIO) and JIPMER faculty members.

The programme started with brief presentations by Dr. Shirdi Prasad Tekur, Dr. Dara S. Amar, Dr. Jacob D. Raj, Shri Swami Swatmananda, Lt. Col. Parmar

and Lt. Col. S. Singh on their experiences in the field of the Disaster Management. Subsequently, the participants were divided into three groups and assigned different tasks.

One group prepared the outline of the course contents for training of key health personnel to conduct training programmes regarding flood and cyclone while the other two groups prepared modules for Cardio-Pulmonary Resuscitation (CPR) and First Aid for training medical students and other health personnel, including the objectives of the course, course contents, details of teaching/learning methods and methods of evaluation.

FUTURE PLANS:

1) Upto December, 1992:

It is proposed to develop a plan on Emergency Medical Services Development for the management of mass casualities in areas such as:

Traffic Accidents; Management of Acute poisoning (due to Methyl Alocohol, Pesticides, etc.); Burns; and Chemicals.

The Centre will produce a module on Cardio Pulmonary Resuscitation (CPR) and First Aid for training medical and health personnel.

Preparation of 35 mm slides on CPR and First Aid. These slides will be targeted for training of lay people also. One set of such slides will be distributed to the Disaster Management Centres at the All India Institute of Hygiene and Public Health, Calcutta and the NICD, Delhi, the two other collaborating centres of DGHS.

2) For 1993 - 1994

TRAINING PROGRAMMES:

- 1) The Centre will hold two workshops per year during 1993 and 1994, lasting for four days each on Emergency Medical Relief on Disaster Preparedness targeted to training key health personnel.
- 2) The Centre will also hold ten CPR training workshops of four hours each targeted to medical officers of Primary Health Centre.
- 3) In view of the existence of NTTC at JIPMER, it is envisaged that this Centre should focus on medical colleges in training their faculty and more importantly introduce emergency preparedness and response in their curricula activities at the undergraduate and the postgraduate levels. Towards this, the JIPMER has included the objective "to organies health care in calamities" in the list of institutional objectives of MBBS training at JIPMER.



FACULTY DEVELOPMENT:

- 1) The Centre will require assistance from SEARO, WHO in the form of short-term fellowships for faculty development in the areas of Emergency Medical Services.
- The Centre also requires services of a short term consultant with the help of SEARO, WHO for establishment of a Documentation Centre and preparation of course materials. With the help of the consultant, the Centre proposes to make three to four realistic simulations on different disaster situations and EMR. This will be utilised during the workshop for training key health personnel.

DOCUMENTATION SERVICES:

The Centre plans to establish a computerised data base services to provide documentation on disaster and EMR.

SITE VISIT REPORT:

1. Premises:

A study of the types of natural disasters that occur currently in the three southern States viz., Andhra Pradesh, Tamil Nadu and Union Territory of Pondicherry was undertaken during September and December, 1991. The basic emphasis was to find out the existing patterns of management, both by Governmental and the non-governmental agencies as were prevalent in these three States and also identify the training needs for Disaster Preparedness Response (DPR). The plans and activities of this management are seen to have three phases viz., what prevail before (e.g. Preparedness), during (management of the affected people including the medical relief given) and after (e.g. rehabilitation) a disaster strikes. The means of study adopted were actual visits of the sites concerned, interview with the officials directly involved and the analysis of the data gathered. A common trend that emerges is that all the personnel involved do recognise on their own that there is a great need for a centralised training programme and assert that this alone would be an effective national bulwark towards managing these unavoidable calamities.

2. Objectives:

- (1) To find the nature of disaster preparedness and management through site visits.
- (2) To identify the curricular needs and contents thereof for a training programme in DPR.

For the former purpose, a situation analysis is first presented and the training needs are then sketched in its light.

3. Situation Analysis:

a) Topography: The three regions covered occupy a large area of the eastern half of

53

South India including the whole of the coastal line of the peninsula on the East. Of these. Andhra Pradesh and Tamil Nadu are large States while the Union territory of Pondicherry is not only small in comparison but is also divided into four separate parts viz. Pondicherry and Karaikal contiguous with Tamil Nadu, Yanam contiguous with Andhra Pradesh and Mahe which is near yet another State viz., Kerala on the West Coast. Topographically, however, they are all rather similar in the sense that they are all subject to periodic cyclones and attendent floods in view of their flat land surface bordering the open sea with no continuous range of hills to obstruct the fury of the winds across the sea waters. The impact of the disasters as well as the existing measures of managing them, therefore, have many common features in all of them.

bl Management: Some of the important needs of the management of the disaster felt by all the three States can now be listed; These, however, are already being taken care of to a varying degree among the three States. The needs at the very outset for instance are: selecting disaster prone areas on an increasingly downward scale from District to block and finally to the village level so as to aid concentrated care and study; gathering information from competent records as well as actual interview with the officials concerned and studying this data as an aid to increase preparedness efficiency: developing contingency plans, hazard maping of risk areas and most importantly adequate disaster management information system; ensuring actual preparatory measures (e.g. storing of the required materials and medicines well in advance; ensuring communication smoothness e.g. taking steps to maintain road efficiently; carrying out repairs, embankments etc.; specifying fully the coordination details of the levels of management as well as implementation; carrying out technically efficient and rapid assessment of the multifarious activities involved; and finally, taking steps to maintain immediacy of action and absence of delay in response as well as undertaking surveillance and monitoring as needed, for example of epidemiological, nutritional and fodder stock aspects after a cyclone and flood.

What emerges succitly from this study is the absence of any formal training among most categories of the personnel involved. In fact, as pointed out above, a keen desire was actually expressed towards this effect by all the officials interviewed. The latter had uniformaly suggested that such a training would vastly improve their own all-round efficiency in managing the disaster situation and mitigating the after effects. Quite a few of these measures, for example, making rapid assessment surveys and imparting better management skills, are rather technical tasks and are, therefore, bound to improve the efficiency specifically among the higher cadres of the personnel by prior training. Even the general public would profit best if some training is given to them in matters like first aid, treatment of minor ailments, pre-hospital measures that they can themselves undertake and also some basic skills in rapid and low-cost construction of houses, roads, embankments, water services and the like.

The three priority needs that arise in a study of all of these requisite activities are specified. These are: strengthening of the plan in preparatory activities (e.g. repair of roads, embankment and dams in advance, early evacuation of livestock; and building up of adequate stock of the essentials; establishing sound and sensitive Disaster Management Information System at a moment's notice; and, very importantly, developing a standardised system of reporting of the events.

The last step is very vital (though unterfiniately least attended to at present) for creating an effective data base on the national and the international levels for all further planning.

It is needless to stress again the high value of the training programme in imparting the all-round quality of the services rendered on the lines of the activities mentioned above. In fact, all of these are to be treated as highly skilled activities and, therefore, prior training of the requisite calibre is bound to serve the efficiency of work and also to avoid confusion and working at cross purposes of the personnel involved in a situation like a disaster, where time factor is extremely important.

4. Personnel to be trained:

The key personnel to be trained and their classified levels can be identified as follows

Level - I State level personnel:

- Relief Commissioner of the respective States:
- Secretaries, Health, Civil Supplies, etc.;
- Directors of Medical and Health Services:
- Other State level officers of different departments:
- State level NGOs

Level - II District level functionaries:

- District Magistrate;
- District Chief Medical Officer and other
- District health officials;
- District level NGOs

Level - III Block level officials:

- Block Development Officer:
- Medical officers and other staff members of Primary Health Centres;
- Block level NGOs

Level - IV Community and village level workers

It was felt that JIPMER should first take up Level-1 key personnel for training. Later, if deemed desirable and feasible, Level - II may be taken up for training.

The training programmes should:

- 1) cover general principles of the disaster cycle and its management:
- 2) focus on disasters common in South India such as floods, cyclone, etc.;
- 3) focus on man-made disasters as applicable to India.

The duration of the training for Level-I should be of three days. There can be two workshops per year. It was decided that for Level-II the content and duration should be decided in consultation with Level-I functionaries.

The instructional methods to be adopted for training should include;

- 1) Introductory lectures:
- 2) case studies and simulated problems using written cases and computer models;

The aim is to successfully motivate the personnel and sensitize them on emotional/religious/social issues involved in a disaster

The core content for Level-I training must consist of:

- 1) disaster management information systems (DMIS);
- 2) disaster epidemiology:
- 3) rapid assessment and response;
- 4) relief measures;
- 5) intersectoral coordination

There is also a need for continuous evaluation of the training programme. This must include a short-term evaluation based on feedback and performance in simulation exercises and a long term evaluation based on feedback from the key personnel on how they perform in training other levels of workers and their own activity during actual disasters.

5. Training contents:

The principal contents of Disaster Training Plan would be: the details of identification of the governmental and voluntary agencies (NGOs) concerned in the region and their existing disaster management plans at all levels. The trainers should be properly instructed regarding both of them first. The former would involve imparting knowledge of the commanding and coordinating levels of the officials concerned, for planning loverall as well as sectoral, plus medical, transport, communication services and the like), for carrying out emergency requirements, calling measures for external assistance from outside the plan area and setting up procedures for information needs, and also, for the administrative needs and the financial procedures entailed therein. Such information given according to the levels of the trainees concerned would defintely enhance the efficiency of the training imparted at every operative plane.

SUMMARY AND RECOMMENDATION:

Summing up the present report, it may be noted that though quite an appreciable amount of both governmental and non-governmental measures are already being undertaken in the three States covered, a common need that is keenly felt is training programme.

Steps may therefore be undertaken to develop such a programme which will serve all the three States

In the light of its several assets JIPMER has already been identified as a Centre for training. As such, further measures, administrative and financial, may be taken up immediately to initiate the activities for disaster management specially.

In addition, it is very essential to note that:

- (i) A vast amount of literature already exists in the three States as regards the several aspects of disaster preparedness and management;
- (ii) In fact, there is an urgent need to compile, index and summarise them adequately so as to aid effective and rapid use;
- (iii) This is of particular value since the literature is constantly growing;
- (iv) Investigations of short term and long term effect of disasters on physical and mental health on the one hand and the overall development activities of the States on the other constitute another important need.

List of Reports and the material collected during the site visits to Andhra Pradesh, Tamil Nadu and Karaikal respectively;-

Andhra Pradesh:

- 1) Cyclone and contingency plan of action. Revenue Department, Government of A.P.
- 2) Cyclone contingency plan of action. Vishakhapatnam District.
- 3) Memorandum on cyclone damages, May 1990. Presented by the Government of A.P. to the Centre.
- 4) N. G. O.

Tamil Nadu:

- Our report of the visit and interview with Government and non-government agencies in Madras.
- 6) Anti Disaster Plan. Government of Tamil Nadu 1978.
- 7) Contingency plans to mitigate floods and cyclone in Madras City 1991.

U. T. of Pondicherry

- 8) Cyclone and Floods. Restoration and Relief Measures Proposals 1991.
- 9) Cyclones and Floods. Restoration and Relief Measures Proposals Supplementary details
- 10) Cyclone/Flood. Relief Manual, 1990
- 11) Report on Core Faculty Training ... Sponsored JIPMER 1991.

ADMINISTRATIVE STAFF COLLEGE OF INDIA

The Administrative Staff College of India(ASCI), with financial support from WHO, has been working on Disaster Preparedness studies and training activities since April, 1992. As per the list of activities included under the contractual Service Agreement (CSA), the ASCI has taken up case studies on cyclone and floods, designing a computerised simulation game, developing audio-visual material and organising a one -week training course on disaster management.

A brief summary of the activities in progress is presented below:

Case Studies on Cyclone and Floods

The ASCI study team initiated the case studies on preparedness plans for cyclone disaster in the coastal districts of Andhra Pradesh in may 1992. The team visited Nellore, Guntur, Krishna, East Godavari, West Godavari, and Vizag. During the preliminary visit, the team held discussions with the District Administrators, District Medical and Health Officers and Heads of Departments of Animal Husbandry, Irrigation, Agriculture and Public Works. Reports and documents from the Districts on the emergency preparedness plans were collected and collated.

During the first visit by the team, the relevant secondary data were collected from the Departments, besides information through discussions with the district level officers. Their impressions, views and perceptions on the preparedness plans for cyclone disasters were recorded. A draft of the case has been prepared, and this will be further enlarged to cover the phase of cyclonic storms that cross the districts, which are highly probable during October-November. This will highlight the strength/weakness of the Department of Health in meeting the challenges.

Some of the observations recorded during the discussions are presented below:

- (i) During the days / hours the cyclonic storms cross the coastal areas, the district Medical and Health officers have the responsibility of deploying teams with drugs and vaccines to the areas affected. The teams are expected to undertake mass vaccination and distribution of vitamin tablets. Shortage of drugs, injection needles and other supply items pose problems.
- (ii) Removal of dead bodies and carcasses is the responsibility of the Police Department. The presence of a doctor is required to issue the death certificates prior to performing the funeral. In the absences of a doctor to complete the formalities decomposition of the bodies takes place faster.

- (iii) In the areas flooded, during the cyclonic storms, wells used as drinking water sources, get polluted and therefore need chlorination. With inadequate transport facilities, Health Department personnel find it difficult to take up this activity.
- (iv) The District Medical and Health Officer is expected to prepare a roaster of doctors, both Government and private, who could be called upon to attend to any emergency. As mentioned by a District Medical and Health Officer, the response from the private doctors has not been encouraging.
- (v) Some of the cyclone shelters available in the coastal areas are not usable during the rescue operations. Due to poor maintenance of the buildings, the shelters are not safe places.
- (vi) During the days immediately after the cyclone, VIPs tend to rush to the affected areas. The presence of the senior officers is essential to brief VIPs on the various aspects, including the relief and rescue operations carried out, extent of damages, etc. This, according to some of the officers the ASCI Team met, takes them away from the operation and thus they are not able to attend to the emergency.

The ASCI Team has been advised by the DMHO of East Godavari district to study an island inhabited by a small group of fishermen and the problems faced by them during cyclone. It has been decided to take up this human settlement for the case study.

SIMULATION GAME

Management games have been extensively in use to train managers by simulating a situation in which they are to take managerial decisions. A Simulated Cyclone Management Game known as "SIMCLONE" designed by Prof. S. Ramani, Director National Institute for Training in Industrial Engineering, Bombay, has been used effectively in the training courses on Disaster Management. Similar to this, it is planned to develop a game on Drought Management.

A droughtprone district has been selected in Tamil Nadu. Data on the past drought years covering the extent of area, population, crops affected, financial outlays and expenditure and other related aspects are to be collected. A mathematical model linking up the decision taken on resource allocation, schemes executed to mitigate drought and consequences such as damage to crops, loss of human and cattle population, unemployment, etc., will be developed.

The secondary data on the population, number of women and children affected, crops damaged, etc., would be distributed to the course participants and they would work in groups to take decisions on resource allocation and other related aspects. The decisions taken by them would be fed into the computer and reports on the damages/losses will be obtained using the game package. This will provide an opportunity to learn the mistakes one might commit in decision making. The proposed game will be used in the training course on Disaster Management at ASCI, sponsored by WHO, in March 1993.

DOCUMENT .

59

AUDIO VISUAL MATERIAL

The ASCI will develop audio-visual material on cyclone in coastal Andhra Pradesh. Video recording of the pre and post cyclone warning periods will be made. This will highlight the role of the District Medical and Health Department in the various operations. Recording of interviews with affected persons will also be done. This will be accompanied by a commentary based on a script to be drafted. The Audio Visual Research Centre of Osmania University, Hyderabad, has been approached to cooperate with ASCI in video recording, editing, etc. This activity will be used in the training course scheduled in March 1993.

TRAINING COURSE IN DISASTER MANAGEMENT

The ASCI has been offering a one-week training course on Disaster Management since 1981. It is designed to train Government officers and Executives from Voluntary Organisations in the different aspects of management of disasters which include, among others, emergency preparedness planning, team building and coordination, besides dealing with some special issues related to management of natural disaster.

The course on Disaster Management for the current academic year (1992-93) is scheduled from March 15 to 20, 1993 sponsored by WHO. The participants will be from the departments of Health, Irrigation, Agriculture, Public Works, Revenue, Finance, Planning and Animal Husbandry from the Central and State Governments, besides district level and voluntary organisations engaged in managing natural disasters.

PUBLICITY AND REPROGRAPHIC FACILITIES

The ASCI had planned to bring out a Newsletter on natural disasters covering the Indian subcontinent by compiling information on the various natural disasters from different sources. However, due to shortage of professional manpower it has been decided to postpone this activity to the next academic year.



DISASTER MITIGATION - PRIORITIES FOR RESEARCH

A Note by National Environmental Engineering Research Institute, Nagpur

Concern over heavy loss of life and property, triggered by natural disasters and industrial accidents and the severity of global as well as localized environmental deterioration, has generated widespread consensus on the need to deal with the causes as well as the effects of environmental disasters. The UN Charter for International Decade for Natural Disaster Reduction (IDNDR) aims at alleviating human, social and material losses resulting from natural disasters through concerted local, national, regional and international action.

It will be appropriate to address the task of devising preventive, mitigative and control strategies not only for causes of natural and manmade disasters but also for the complementary environmental emergencies which may trigger such events in order to realise the charter of IDNDR.

Disasters have become a growing concern of the local, national and international community, due to their devastating effects and the frequency with which they are occurring. Bhopal, Chernobyl, Armenia and Mexico are only a few among the most serious and well publicised events of the previous decade.

Broadly defined, disasters may be characterised by either a sudden or slow onset, and caused by natural phenomenon, human activities or a combination of both. The effects of a disaster, even when triggered by natural forces, are seen as a consequence of development susceptible to damage. Whatever triggers an event, other factors are often at work to produce disastrous results. Ecological mismanagement, inappropriate landuse, poverty and rapid population growth are all known to increase vulnerability to natural disasters, particularly in developing nations like our country.

Many of the disasters of the last decade can be directly attributed to hazardous development choices. Accidents such as oil spills, chemical explosions, releases of toxic chemicals into the air or water and radiation emergencies are the most serious examples which cannot be overlooked. Such disasters occur within the context of industrial and technological development. Triggered by a human error or a technological breakdown, they illustrate where safeguards have failed or are inadequate to the level and form of development pursued by a society.

Gradual, but severe, ecological degradation represents another form of disaster. The term "ecological disaster" is increasingly used to describe situations where environmental mismangement has produced widespread and severe deterioration. Such creeping disasters are associated with industrialisation in the absence of appropriate environmental controls and protection. But the term also applies to non-industrialised

regions where ecological mismanagement has resulted in large scale soil erosion, desertification, loss of forests or other forms of serious deterioration. An ecological disaster suggests increased vulnerability, with short term as well as long term consequences. While the primary effects are environmental, the ecological damage cannot be separated from the human and social costs of such disasters.

The transboundary effects of sudden and creeping disasters raise additional concerns requiring international attention. Among other issues, questions of liability arise in the pollution of shared resources such as rivers, seas and lakes, and in the release of toxic emissions into the atmosphere, whether accidental or deliberate.

Global warming, climate change and damage to ozone layer are also perceived as disasters. Such threats and potential for disasters highlight, more than any issue, the need for cooperation and concerted effort on national, regional and international levels.

Operational Definition of Environmental Emergency

An emergency is a sudden, urgent, usually unforseen occurrence or occasion requiring immediate action with judgement. Environmental emergencies could be accentuated by natural factors or abnormal functioning of technological facilities and have the potential to cause serious injury or loss of life to a large section of the population or to result in extensive damage to property and serious disruption of life.

An ecological or environmental emergency implies a situation in which serious damage to the environment has occurred or imminent and in which immediate remedial action is required. Such emergencies are most often associated with sudden accidental incidents, but may also be used to describe situations where a gradual deterioration has reached crisis proportions, demanding emergency measures. As with slow developing crises, the implications nearly always extend beyond the direct and immediate environmental damage, often with long term health and economic costs.

Current Activities of the Institute

The following specific areas of research relevant to disaster mitigation are currently pursued at this Institute (NEERI) under various projects:

- * Development of Disaster Management and Emergency Preparedness Plans for chemical industrial projects based on probabilistic risk assessment;
- * Environmental Risk Assessment for Industrial, Water Resource and Mining projects besides hazardous waste sites;
- * Development of Off-site Emergency Preparedness Plan at the district level based on area risk assessment and vulnerability analysis;
- * Environmental-health interface modelling, calibration and validation.

Priorities for Research

- 1. Preparation of state-of-art reports based on review of the existing status of predisaster prevention and postdisaster remedial strategies for all natural and manmade disasters and environmental emergencies;
- 2. Establishment of a centralised database/clearing house for collection and dissemination of information pertaining to past case histories; identified hotspots; nature of emergencies; vulnerable population characteristics; appropriate warning, disaster prevention and mitigation measures; protective systems; skilled and technical personnel; relief supplies and other infrastructure facilities;
- 3. Development of training material and training of personnel for warning, prevention and preparedness activities;
- 4. Genotoxicity assays for chemical toxicants;
- 5. Environment-health interface medelling with respect to chemical pollutants andbiological contaminants.



TRAINING PROGRAM FOR DISASTER PREPAREDNESS

Presented by Mr. R.K. Thankappan. Principal. Health & Family Welfare Training Centre. Trivandrum

There can be a national level training team attached to one of the national institutes like All India Institute of Hygiene and Public Health. The members of this team may be trained at some of the international institutes where such training programmes are being conducted. The national institute could organize training programmes for the State level trainers. The State level trainers may include the trainers of the regional health and family welfare training centres and the faculty of the medical colleges. They can also impart training to some of the NGOs.

There are 47 regional health and family welfare training centres in the country to impart various in-service training programmes for the health personnel working in the country. These training centres are situated in various States, each training centre catering to 5 to 8 districts. It would be ideal to integrate all the training programmes into the existing training system. While imparting training to these trainers this point may be kept in mind so that appropriate methodology could be selected considering the time available for the particular topic, i.e., disaster preparedness.

Apart from the training given through the regional training centres there are certain vertical training programs going on in the country like training in immunization program, ORT program and some other national programs. This creates some duplication and so, the current thinking at the national level is to intergrate these vertical training programmes also into the in-service training given through the training centres. The regional training centres may give training to the faculty of the 471 ANM training centres in the country, 33 MPW male schools and 46 promotional schools or LHV schools. They would be able to include the subject of disaster preparedness in their teaching.

The medical colleges in the respective States may give training to the medical students and the house surgeons as a routine. Some of the medical college faculities could be called as guest faculty when training programs are organized for the health service staff.

District Training Team

One of the health officers at the district level may be given the charge of the training programme at the district level. He/She will be in charge of the training programmes as well as the information regarding the training system in the district. He/She would prepare a list of the persons to be trained and assess the training load in the district. The basic health workers i.e., the multipurpose workers, male and female, would be

trained at the district level. In addition, they could train some of the personnel from the other departments also.

Block level training team

This is a concept recently developed and implemented in some of the States like Maharashtra. Here, the grassroot level functionaries like community health guides, dais and, if necessary, the multipurpose workers also could be given training.

The Government training institutions generally impart training to the Government functionaries only. In an area like disaster preparedness it is very important to train the private sector personnel also. This may be possible through professional organizations like the Indian Medical Association.

When a disaster occurs, the NGOs will be the first to act at the local level. So, it becomes a priority to train the NGOs. Training of NGOs can be undertaken at all levels, the national, the State, the district, and the block level. Their training can be arranged separately or some of the people can be called along with the Government functionaries.

Training the personnel of other sectors is as important or sometimes more important than training the health personnel. This training may be taken up by the respective departments. But there needs to be a coordinated effort even in training.

COPING WITH NATURAL DISASTERS - INPUTS FROM NGOS

Presented by Sri N.K. Jain. Convenor. Joint Assistance Centre.
New Delhi

"Disaster is any disruption of the human ecology that exceeds the capacity of the community to function normally", according to UNDRO. The WHO has further enlarged the concept and says "Disaster is any occurrence that causes damage, ecological disruption, loss of human life, deterioration of health and health services on a scale sufficient to warrant an extra-ordiniary response from outside the affected community."

The basic premise of the UN declaring the 1990's as the International Decade for Natural Disaster Reduction is, "Much that is known is not universally applied". It is hoped that by the end of the decade mankind will have gone far towards learning to live with natural hazards and not simply suffer from their violence.

Globally, 17 individual disasters had killed more than 10,000 each since 1949. The losses in India per year go beyond Rs. 1000/- crores which is nearly the Annual Plan of Andhra Pradesh. This figure represents the quantum of Central assistance. It is here that one has to view the decision of the Union Government to provide Rs. 15 crores for setting up a Disaster Management Institute in the Sixth Five Year Plan. Knowledgeable sources point out that no provision is being made even in the Eighth Plan.

The IDNDR objectives provide a key to the riddle. It says, "Prevention, protection and preparedness against natural disasters require action on the spot that is to say in the countries and at places where disaster may occur. Such action can only be planned and organised on the national or local scale."

The NGOs, or the independent sector as they are lately being called, by their very nature tend to be small even though facing up to the challenge of disaster, which again by their nature are large. But Schumachar had said, "Small is Beautiful". Schumachar further said in a later work,," use science to understand nature and not use it to exploit the same". Disaster prevention is just not science. It is a complex process of technological and sociological factors. Thus, there is a great need to provide integrated approach to science studies. It may seem that I sound a bit pessimistic but no. Here are some positive trends in International and National areas. Most of these are NGO initiatives, though quite often there are major Government inputs simultaneously Needless to say, that both sectors have to complement and supplement each others efforts.

HOPEFUL TRENDS - INTERNATIONAL

1972	Advent of UNDRO
1982	World's first disaster management diploma launched.
1986	Birmingham Polytechnic launch disaster mitigation course.
1986	Pan Caribbean Disaster Preparedness Project started.
1987	Our Common Future report released.
1987	UN Decides on the decade (IDNDR).
1988	UNDRO launched. (Now UNINET)
1989	Disaster Management Diploma initiated in Australia.
1990	WHO designate 1991 World Health Day April 7, theme "Health for all
	when the Disaster Strikes".

HOPEFUL TRENDS - NATIONAL

1978	Joint Assistance Centre established
1983	PREPARE is established at Madras
1984	MMM Engineering College introduces Disaster Management subject in their post graduate course at Gorakhpur
1986	Institute for Youth & Disaster Preparedness set-up in Orissa
1987	Disaster Management Institute set-up in Bhopal
1988	3rd Indian Engineering Congress in Madras addresses itself to the IDNDR and resolve to observe October 9 as Disaster Mitigation Day.
1990	Er. Rangachari delivers the First (1990) Disaster Mitigation Day.
1991	78th Indian Science Congress focusses on the theme "Coping with Disasters."

It is with such hopeful trends that I recount here the role that the J.A.C. has played during the past decade, in the context of its capability to provide inputs for coping with disasters.

The Joint Assistance Centre (J.A.C.) was established in the aftermath of the 1977 Andhra Pradesh cyclone and as a result of concern expressed in conference after conference.

The aim of JAC is to campaign for generating awareness of the need for every one at all times to be in a state of preparedness to face natural as well as man-made disasters, with composure and confidence. This can only be done through training and education about disasters and that remains (JAC's) main activity since inception.

The JAC started with no past experience or documentation. It organised its first course in December 1978 with just five participants. Form here, we have grown in strength and today have developed capability to render consultancy and assistance to anyone anywhere in India on a no-profit basis. It would be most ungrateful of us not to acknowledge the help and the support of a large number of friends and several Government departments.

GROWTH OF JAC

The first national workshop on "Disaster Relief Operations" was organised by the JAC, jointly with Vishva Yuvak Kendra, at New Delhi from August 8-10, 1980. A total of 59

participants took part and their recommendations are 'Gita' for us. Rightly, the accent was placed on Training, Education, Information, Coordination both prior to and during disasters. Thereafter, the JAC organised a one week training course for leadership in Disaster Mitigation every year from October 9-16 — October 9 being Disaster Mitigation Day and October 16 being World Food Day. Due to disturbed conditions in 1990 this programme was not organised. In 1980, we brought out our first publication "NATURAL DISASTERS - A GUIDE FOR RELIEF WORKERS. In 1981, we brought out the first issue of the quarterly journal "Disaster Management".

In 1981, three 10 day courses on disaster preparedness were organised. Ever since then, programmes have been organised in Tamil Nadu, Orissa, UP, AP, Gujarat, HP and Delhi.

JAC ACTIVITIES

1. Publication Programme

- a) Disaster Management a quarterly already discussed above.
- b) A monthly "Disaster Index" that will present the "media and disasters" as monitored from print media initially.
- c) A reference book "Disaster Resource Directory" is expected in a few month's time.
- d) A number of books on disasters are in the pipeline. JAC have already been authorised to assign ISBN numbers to its publications.
- e) Two Hindi publications are a story book 'KARTAVYA' for children and translation of Earthscan book "Natural Disasters Acts of God or Acts of Man".
- f) We published the book "Environmental Education in the context of Disasters" on behalf of Indian Institute for Youth & Development, Orissa.

2. Disaster Information Service

- a) Disaster Reference Library has over 3000 books; over 60 disaster related journals; over 4000 slides on disaster education; about a dozen overhead projector transparency packages and about a dozen video cassettes on disasters. The library has been built on gifts, reciprocal exchange and includes flip charts, audio cassettes for children, a video for deaf & dumb. Recently, we have installed a PC-XT IMB Compatible Computer to streamline our "informations"
- b) We not only publish material but have also made agreements with several non-profit groups to distribute the material from:
 - (i) Disaster Research Centre, University of Delaware (of USA).
 - (ii) Datum International (of UK)
 - (iii) Centre for Disaster Management Studies

- (iv) Voluntary Health Association of India (New Delhi)
- (v) Third World Book Store (Goa).
- c) We monitor national newspapers in Delhi and regional newspapers in Bihar, Gujarat, Orissa, UP and have an indexing service. Electronic media is being selectively monitored.
- 3. Training and Educational Programmes.
 - a) Annual Leadership Training Course Oct. 9-16 every year as discussed earlier.
 - b) We conducted a one week workshop for health administrators for VHAI sponsored candidates and are capable of organising specific target oriented courses in any field of man-made and natural disaster except technical courses. For later courses, there are several specialised agencies.
 - c) We organise regular seminars, workshop, symposiums and exhibition as also participate in them.

CHEMICAL HAZARDS : DISTRICT DISASTER MANAGEMENT PLAN

(Paper circulated by Tata Risk Management Services)
by
Mr. Subir Gupta

This pertains to Off-site Emergency Plan (District Disaster Management Plan) of the State Administration of Vadodara District and On-site Emergency Plans of Individual Industries in this area. Only the specific conclusions are summarised and issues highlighted. It would be relevant to elaborate certain basic concerns (A division of Tata Sons Ltd.) were retained owing to their pioneering effort of over a decade in impact assessment of hazards and risks and mitigation of industrial hazards in developing countries. The Ministry of Environment, Government of India realised the serious consequences of environmental impact resulting from chemical disasters and directed this study. It was felt that in a developing economy the priority on sustainable development should be given to the reduction of consequences of such disasters.

BACKGROUND

It is acknowledged that regardless of the disaster, whatever the cause, the environmental impact is immense whether it is on a short-term or a long-term basis. Industries and Environment Office of UNEP developed the guidelines for responding to technological accidents, the acronym being APELL — Awareness and Preparedness for Emergencies at Local Level. The experts connected with developing this handbook in their wisdom, mentioned the consequences of a disaster regardless of the cause as these could be natural or man-made. Our knowledge has not progressed to the stage where all causes of naturally occurring events are understood, predicted or effectively prevented. However, the need to prepare ourselves to respond to accidental emergencies when and where it occurs, cannot be underestimated. Therefore, the response Plans should be effective enough to mitigate the losses to the extent possible in case of such accidents.

A proper On-site Emergency Plan can contain a large number of potentially disastrous situations confined to the boundaries of the industrial unit. However, accidents can and will happen and if an incident goes out of hand it can lead to a major catastrophe having Off-site implications. The APELL handbook has clearly identified that to mitigate such disasters the FIRST RESPONSE TO THE EMERGENCY, THE SPEED WITH WHICH THE RESPONSE OCCURS AND THE PLANNING ITSELF THAT HAS GONE INTO SUCH RESPONSE are factors that reduce the losses to the community and the industry itself. Thus, not only a correlation was established between On-site and Off-site Emergency Plans, but the qualitative guidelines were provided. The Tata Risk Management Services used these in the context of Indian environment to develop the study.

THE PROJECT

The Government of India, Ministry of Environment, felt that this matter needed closer scrutiny and a select area which had a high concentration of chemical and petrochemical units was identified for an indepth study by Tata Risk Management Services. The broad objectives, as identified by the Government for this study, were:

- 1. Identified major hazardous units in the area would submit their On-site Emergency Plans, Safety Audit Reports and Risk Evaluation studies for examination.
- 2. These plans and reports would be analysed in detail for identifying hazards that may be overlooked and the effectiveness of protection measures already incorporated.
- 3. Analysis of process hazards and controls subject to sufficient data being available in the On-site Plans or provided by the Units themselves.
- 4. Correlation of these On-site Plans with the existing Off-site Plan with the District Collector.
- 5. Identifying further needs in terms of studies, reports or information necessary to make the Off-site Plan more effective and develop a model District Disaster Management Plan. The premise on which the model District or Area Disaster Management Plan was to be developed was consideration of existing major hazards in the area from chemical industries. Generally they were considered as:
 - a. Toxic releases
 - b. Fires
 - c. Explosions
 - d. Combinations of all three or any two of the hazards.

The Most Hazardous Category units were to be considered in this instance, as per E.P. Rules 1989 of the Ministry of Environment.

METHODOLOGY

To evaluate the exposure i.e., Off-site implications of any or all the hazards it was imperative to examine the On-site Plans of most hazardous units, examine the details contained therein and develop the MAXIMUM-CREDIBLE LOSS SCENARIOS.

It would be interesting to mention that till such time that this case was considered afresh i.e., in 1990 July/August, the basis of developing an Off-site Plan had not been defined. Using Maximum Credible Loss (MCL) Scenarios as the base got defined in the interaction with Government Officials, Tata Risk Management Services and visiting expert, Dr. Robert Cumberland of National Chemical Emergency Centre. Environmental Informatics, Oxfordshire, U.K. This is a major lacuna and it would probably apply equally to all developing countries.

The concept of MCL was a parallel drawn from the underwriting profession's assessment of maximum possible losses in case of explosions, with the difference that

DOCUMENT 73

it would examine certain factors like available on-site protections, design of structures, location and siting of hazardous installations and their proximity with one another and the individual management's awareness of the potential hazards. Though it would be a subjective analysis, outside consultants (SAFETY AUDITORS) conducting it would lead to impartial assessments. In addition, it was felt that the necessary data for such assessment in totality may not be available from all the units at that juncture. Hence, only the most serious hazards are to be considered for off-site implications. If the Administration could gear itself to handle the most serious consequences, accidents of smaller magnitude could be handled effectively.

Having finally come to the conclusion that the basis of the District Disaster Managment Plan i.e. an effective Plan, needed detailed analysis of On-site Emergency Plans and Maximum Credible Loss Scenarios of individual units, the question to be addressed, therefore, were:

- a. Analysing and evaluating MCL and therefore what data was necessary from the individual units:
- b. As per Government's guidelines, all most hazardous units had to have their On-site Emergency Plans and do these plans carry enough information to evaluate MCL;
- c. The existing Off-site Plan of the area had to be examined *denovo*. In all over 50 chemical units were examined in the identified area.

LIMITS OF DATA AVAILABLE

- Of over fifty most hazardous units, only 12 On-site plans or only a semblance of On-site plans, as a document, were available.
- Some of the most hazardous units were not appearing in the District authorities list at all.
- The method of categorising the Most Hazardous Units left out potentially most hazardous units from the available list only because the units or installations themselves refused to acceept their potential hazards.
- Some installations which may not per se be hazardous but would act as catalysts or trigger for a major catastrophe had not been considered at all either by District Authorities or the Organisations themselves, like the Railway Yard or Electric Generation Units/Substations.
- Large number of hazardous chemicals, though present in substantial quantities, had not been declared to the District Authorites.
- Even the On-site Plans of 12 units did not have data for Maximum Credible Loss Scenarios. Whenever any study was carried out, it was more micro study providing hardly any data for Off-site implications.
- Major Hazards had not been considered and a few dispersion studies that were available, were limited in scope and nature.

- No safety audit reports, Hazop analysis, Risk evaluation studies has been carried out.
- The On-site Plans also provided negligible or no data regarding major issues, e.g.:-
 - 1. Fire protection/Detection measures.
 - 2. First Aid details including antidotes, etc.
 - 3. Location and alternative Central Control Rooms in case of emergencies.
 - 4. Procedures and systems for activating CCR.
 - •5. Provision of emergency lighting, etc.
 - 6. Storage layout and details of storage.
 - 7. Meteorological data was insignificant or wrong.
 - 8. Line of command, responsibilities and accountability of emergency personnel was not detailed. .
 - 9. No On-site Plan had considered a cascading effect on neighbouring units and vice versa in spite of close proximity.
 - 10. Terrorist, riot, strike and natural calamities did not appear to have been adequately considered.
 - 11. An informal mutual aid programme appeared to be available however,
- Level & type of support was not deifined.
- No list of capabilities and facilities was available. Condition under which assistance was warranted was not laid down.

CONCLUSIONS

Regardless of the hazard involved, the District Disaster Management Plan, which, in essence, is a safety delivery system, has to define either explicitly or implicitly what is an acceptable level of risk. In the absence of crucial data from On-site Plans, this Credible Loss Scenarios would also provide the parameters for the administration, of what in effect would be the acceptable level of risk. It has to be accepted that this acceptable risk level will also be dependent on other factors like availability of financial resources, trained manpower and other priorities.

RECOMENDATIONS

The Tata Risk management Services provided long-term and short-term recommendations in detail. While it is not possible to submit these in this symposis, major headings only are indicated here.

- 1. The basis of planning and organisation of an Off-site Emergency Plan (On-site recommendations)
- 2. Viable communications:
- 3. Effective warning system;
- 4. Activation procedures;
- 5. System for direction and coordination
- 6. System for recovering and processing information;

DOCUMENT 75

In considering the major disaster effects in the area it was observed that the severity of some disasters foreseen precluded or severely restricted an orderly and well modulated approach to disaster response.

In spite of limits of data, based on experience and information gathered through various agencies, a Chlorine leak of the magnitude of only 20 Tonnes potentially appeared to be one such scenario.

SHORT TERM MEASURES - MOST HAZARDOUS UNITS

- a. Detailed On-site Emergency Plans for all units/installation needed to be developed including development of Maximum Credible Loss Scenarios.
- b. Since shifting of existing installations was not feasible, each installation should be critically examined about its adequacy in terms of equipment/personnel and resources to handle On-site Emergencies.
- c. The details provided in a & b are to be correlated to the District Disaster Management Plan.
- d. The District Disaster Management Plan, to be effective thereafter, requires:
 - i. A formally manned Central Control Room to be manned 24 hours with all facilities of communication etc.
 - ii. Under the control of CCR (Central Control Room) a first Response team of personnel & equipment along with a formal mutual aid scheme to be developed.
 - iii. HAZMAT (Hazardous Materials) Response team and a van fully equipped to handle emergency should be at the disposal of CCR.
 - iv. Regular and frequent Safety Auditing of the Most Hazardous Units/Installations should be made mandatory. Safety Auditors to be external Auditors, duly licensed/approved by the Government.
 - v. Sanctions and permissions for expansions/new Units in area should be allowed only after a close scrutiny of the risk evaluation studies and On-site Emergency Control measures.
 - vi. The operative area of Civil Defence organisations as well as the authority of Municipal fire Brigade to be extended to include these Industrial Estates.
 - vii. Telecom links between the Industries/District Administration and CCR to be made more efficient.
 - viii. Existing hospitals to be geared to handle specific effects of the potential hazards and regular drills to be conducted to ensure proper response at the time of any emergency.

LONG TERM

- 1. The Town Planning activity to keep in mind the identified hazards and the danger zones.
- 2. Link roads, bypasses, overbridges, railway crossings, railway trunk lines, shunting yards to be the realigned/developed/repaired to ensure smooth Emergency operations.
- 3. Toxicological Research should be carried out with regard to all hazardous chemcials and a proper Data base prepared.
- 4. A project on the basis of Chemsafe (U.K) should be taken up to advise the Central Control Room & the Civil authorities including Industries on chemical spills. accidents transport or industrial.
- 5. The Central Control Room should be provided with a Data Processing Net Work linked to all the industries and heads of civic bodies not only for data acquisition and retrieval but to serve as instantaneous communication facility also.

As a consequence of the aforesaid exercise guidelines for developing a model Off-site plan/District Disaster Management Plan is being considered.

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